DATA OF TWO YEARS' EXPERIENCE IN OPERATION OF A SYSTEM OF INDIVIDUAL INSTRUCTION

BY

BURK, FREDERICK

SAN FRANCISCO STATE NORMAL SCHOOL

MONOGRAPH C

IN RE
EVERYCHILD, a minor,
vs.
LOCKSTEP SCHOOLING } **A Suit in Equity**

Data of Two Years' Experience in Operation of a System of

INDIVIDUAL INSTRUCTION

SHOWING

Accelerated Rates of Pupils' Progress
Elimination of Wastes of School Time
Actual Saving in Cost of Schooling
Adaptability to Various Schools

THERE ARE NO MISFIT CHILDREN.

There are misfit schools, misfit texts and studies, misfit dogmas and traditions of pedants and pedantry. There are misfit homes, misfit occupations and diversions. In fact, there are all kinds and conditions of misfit clothing for children but—In the nature of things there can be NO MISFIT CHILDREN.

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EVERYCHILD, A MINOR,
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A Suit in Equity

The business of schools is to shape themselves to the pupils. Each child is a special creation, and, strictly speaking, education cannot be the same for any two pupils. That it is the business of schools to saw, to plane and to compress pupils into fixed school molds, is the smug impertinence of an ancient, persistent, and preposterous pedantry. Until this pedantry is uprooted, trunk and branch, schools must fail to fulfill their purpose.

Data of Results, Methods and Costs of Operating Schools by

INDIVIDUAL INSTRUCTION

COMPILED BY

FREDERIC BURK

President San Francisco State Normal

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THE CONCLUSIONS OF THIS MONOGRAPH

An individual system of school instruction has been in operation in the elementary department (first to eighth grades) of the San Francisco State Normal School for the past two years. Records of progress of each pupil have been kept and compiled. From the compilation of this data of experience, this monograph will show the following conclusions:

I. **THE RATE OF PROGRESS.** That the slowest pupils, in normal health of body and mind, will complete the usual eight grades of the elementary school in not more than seven years; that the fastest will finish in not more than five years; that between these extremes, the rates are very evenly distributed; that, in consequence, pupils who enter school at 6 years of age will complete the eight grades between the ages of 10 and 13 years.

II. **ALL PUPILS WILL FINISH THE ELEMENTARY SCHOOLING.** The appalling fact that 60 per cent or more of the youth of the country enter upon world life without the equipment at least of an elementary schooling will be dissipated by the simple solution that practically all pupils will complete the course before they reach the ages at which they at present seek to leave the schools.

III. **GREATER THOROUGHNESS.** That the individual system must upon principle, and does in fact, give a thoroughness and efficiency to every pupil quite beyond any possibility of the lockstep schooling.

IV. **INDIVIDUAL INSTRUCTION COSTS LESS THAN CLASS INSTRUCTION.** The current hasty conclusion to the contrary is due to the fact that the largest item in the cost of schooling by the class system—unnecessary waste amounting to considerably more than 50 per cent—is entirely overlooked. Among the huge wastes inherent in the lockstep of the class system are those due (1) to repetition of grades, (2) to inability to use the gains of accelerated rates of progress, (3) to the regulations that all pupils must learn what only a few have the need of, or the ability to learn, and (4) to certain frictional losses in the teaching of large classes. Individual instruction cuts out these wastes by eliminating their causes.

V. **THE NUMBER OF PUPILS PER TEACHER.** It has also been a hasty conclusion that to operate an individual system would require many more teachers than the lockstep method. This conclusion overlooks the fact that if pupils make faster progress through the grades, the number of pupils in any one class will be reduced proportionally to the increase in rapidity of progress. Our data goes to show the size of classes of 40 to 50 pupils will be automatically reduced to 25 to 30 under individual instruction which eliminates the repeaters, introduces acceleration, and economizes time in other ways.

THE SCOPE OF THIS MONOGRAPH.

In the fall of 1913 Monograph A, under the title of "Lockstep Schooling and a Remedy," was issued. This monograph presented an indictment of the class system of instruction by which all pupils in our schools, indiscriminately, and without regard to differences of mentality, temperament, inborn talents, or tastes, health, absences, etc., are marshaled through the grades by platoons in tight lockstep. To this condition, as a chief cause, was traced the retardation by which between 30 and 50 per cent of all pupils now in the schools of the United States have lost one, two, three and more years. To this condition was also traced the chief cause of the fact that over 60 per cent of all pupils in the United States leave school before they have completed the elementary grades, and are ushered into the struggle of life without the rudiments of education; and finally to this condition were traced the roots of the apathy, the indifference, and the inefficiency in our schools, and the inability to accomplish what they undertake to accomplish.

These facts leave no room for cavil or palliation. There is obviously something radically faulty in some large fundamental underpinning of the school system. The class system, by the requirement that all pupils in a given class shall maintain the same rate of progress, makes the impossible assumptions that all pupils possess the same mental powers in exactly the same degree; that no individuals can ever be absent; that all shall maintain, simultaneously, the same degree of forced attention throughout each school lesson. Such assumptions are obviously impossible, and the existing system thereby creates, by its own hand, the army of laggards. There is no remedy for this laggardism, in the present system, except for the victims to repeat grades—and this is not a remedy. The statistics testify to the results.

Monograph A pointed out that the only remedy must be a new system of schooling which should be made to fit these conditions of manifest differences in pupils, giving to each full opportunity to gain an education at his own rate, and according to situations individual to him. The beginnings of such a system, then just inaugurated in the elementary department, were outlined. The present monograph continues the report of this work, giving data, compilations and consequences of this new system.

Our Elementary Department consists of the eight grades of primary and grammar school work and has been attended by 500 to 600 children, ranging from 6 to 15 or 16 years of age. Distinctly subnormal pupils are not admitted and in all statements it must be understood their absence is assumed. The pupils are taught, not by paid teachers with the assistance of students as is usual in Normal Schools, but directly by the students themselves under direction of faculty supervisors. While

our records of the progress of any individual pupil will not extend over two years, yet the whole field of the eight-year course has been covered and our compilations are upon this basis. In the consideration of the data we have to offer, we wish a distinctly clear understanding of just what our data shows, just what we have accomplished and an equally distinct understanding of what we have not accomplished or have not attempted to accomplish.

We have worked out into actual practice, under conditions of an elementary school, used primarily and essentially *for the purpose of training teachers*, a system of individual instruction. This principle of individual instruction is the same in this school as it would be in any other school—rural, city, or special; and it can be used in any school; but the form of administration is entirely different necessarily. Our form of administration, dominated and complicated by the wholly irrelevant problem of training inexperienced young teachers, offers little, even suggestively, for application to city school systems. With slight modifications, our plans may, however, be used in rural schools, in "special" classes of city schools, and in most night schools.

What we have done during the past two years has been to determine the actual variation in the rates of progress of pupils when each pupil is permitted to learn at his own rate; to compile exercise books in the several school subjects; to make individual instruction in general practicable; and to invent and put into successful operation an administrative system under the special conditions of Normal Training Schools.

The devising of an administrative plan for city schools can only be worked out in a city school. We show that it can be accomplished, financially, with saving to the school treasury. As for the difficulties, it may at least be said that the project is easy, compared with that of adapting the individual principle to a Normal Training School, complicated by the distracting conditions of wholly inexperienced teachers, changing classes three times per day, and changing subjects three times per year. With trained and permanent teachers, the problem of inventing an administrative system for individual instruction is *new*, but it certainly can not be difficult.

We wish to make this fact quite clear, for so many visit us expecting to find in our training school, not only the principle of individual instruction, but also a system of administration exactly fitted and shaped to their own various and particular school conditions.

THE MACHINERY OF INDIVIDUAL SCHOOLING.

The adaptation of texts to make the length of lesson elastically fit different pupils, promotion in each subject separately, the establishment of grade standards upon the basis of the slowest diligent pupil's rate of progress, and the adaptation of a report card to show the individual facts truthfully, constitute the chief mechanical devices for the operation of an individual system.

The Elastic Lesson. If it is impossible to teach a class of fifty pupils *en masse*, it is clearly as impossible to make texts by which pupils may be expected to learn *en masse*. In fact, the difficulties are multiplied. Our school texts, at best, are constructed, not as teaching books, but as condensed essences of knowledge in form salable to school boards. The real task of adapting them as teaching tools has been left to the personal ingenuity of teachers. As well might a farmer be supplied with cold pig iron in the expectation that he could adapt from it his plow, his ax and his shovel! As a consequence, the best results under class teaching have as a rule been obtained by the least use of the texts, combined with the greatest use of teachers of very exceptional ingenuity. But the frequency of teacher geniuses for this task necessarily is so occasional, that the results are what they are. The necessity of a system which shall not depend chiefly upon such occasional accidents of teaching genius is obvious. The form of texts is particularly handicapping to our plan of individual instruction.

It is to this task of inventing and compiling exercise books in adaptation of texts that the members of the faculty have been devoting their extra energies for two years. We have now completed exercise books in arithmetic, language, grammar, history and geography, which have been printed. We are also using, in mimeograph or manuscript form, handbooks in reading, writing, music, drawing and literature, which will probably be printed later.

The lessons to teach new principles or processes are constructed upon an elastic plan. There are duplicate exercises and generally more of them than most pupils will need to work. If a pupil works accurately certain of these exercises he skips the duplicates and passes on to the next lesson. A tremendous premium is thereby offered for accuracy. The pupils of slower grasp do as many of the duplicates, under an automatic system, as may be necessary to secure accuracy in efficient degree. By this device of an elastic length of lessons the text is made to fit the individual needs of the different pupils and no pupil proceeds until he has laid a safe foundation. On the other hand, pupils do no more than is necessary for the purpose.

Automatic Reviews. Subsequent reviews, embodied in the regular lessons, take care of the retention of what is once learned and the system of elasticity is made to apply also to these reviews in a definite, automatic way. Instead of testing pupils' thoroughness of comprehension at intervals of a year or six months, these automatic tests are inserted at short intervals, and if a pupil needs more drill, it is given immediately, before he meets greater difficulties. It is far more economical in time to see that each brick of the foundation is firm rather than to wait until the whole foundation is laid with the possibility of being obliged to commence all over again. These review tests generally are worked into the body of the lessons so that the pupil does not recognize them as such. The tests are followed by corrective exercises; those pupils who do the test without error skip the corrective exercises while only those who need corrective work are given it.

Promotion by Subjects. Under the class system, not only must pupils keep in lockstep one with another, but also each pupil must make even progress in the six to ten or more subjects he may be studying at one time. If he keeps well the step in reading, geography, history, drawing, etc., and yet falls behind in one subject—let us say arithmetic—then at the end of the grade he must retrace the year's work not only in the subject in which he failed, *but also in six, seven, eight or nine subjects in which he succeeded.* It looks inhuman—it is inhuman. But there is and can be no help for it under the class system of administration. There is no way by which a pupil can go forward in certain subjects and retrace work in another. Such a modification would lead inevitably to individual instruction.

By adopting the plan of individual instruction the difficulty disappears. Since the pupil is working by himself, independent of others, it is entirely practicable to take time from subjects in which he makes rapid progress, in order to repair shortcomings in subjects with which he has difficulty. Consequently, our first step is to separate the subjects one from the other, to establish grade standards for each subject and to issue a promotion certificate for each subject whenever the pupil completes the grade's work in this subject. If the pupil tends to run ahead in certain subjects and behind in others, it is an easy matter to adjust the daily time allotments for each pupil in a way to secure evenness of progress so far as this may be necessary.

Grading. What constitutes a grade's work is necessarily a matter of guesswork under the class system. It is merely an arbitrary rating fixed by a Board of Education, usually upon the basis of texts. It is supposed, in a rough way, to be what the "average" pupil should cover. It is fixed under the frank realization that a considerable number can not cover it and will become decided "misfits"; that many others will be obliged to mark time. Under the class system these two losses are necessary. Under the individual system the exact rate of progress for each pupil in completion of a unit of progress can be found. The rate of the slowest is taken as the standard for the grade. The more rapid pupils will finish sooner and pass into the next half grade, or, if we deem it wise, we may shorten the daily allotment of time given to arithmetic by these pupils, giving the surplus to subjects in which they may need extra time. At any rate, under this arrangement, all pupils, fast, slow, or medium, in a given subject, are adjusted satisfactorily.

If the number of hours required by the slowest pupil with reasonable diligence should prove more than allowed by our schedule, we have four alternative means of correction: (1) to increase the allowance by taking time from other subjects; (2) to shorten the amount of ground to be covered in the grade; (3) to inspect the course to discover whether or not some dead limbs of useless knowledge could not be cut out; or (4) to inspect the time-consuming difficulties and their causes with a view of inventing means for faster progress. If we keep proper records of each pupil's work and

progress, these various items will show themselves in a very definite way and we are in a position to find suitable remedies.

If the alternatives mentioned enable us to correct emergency diseases, they also suggest the more important means of constant improvement of our system. With records of progress before us we may be constantly alert to make improvements in methods, or to cut out dead wood in the subject-matter with a view to greater efficiency of all pupils or of certain pupils. If we can, by any legitimate means, shorten the time of the slowest pupils we shorten the grade standard.

These records stand as a constant indicator of our teaching efficiency and as a vigorous, stimulating challenge to improve upon it. We are no longer working in the dark, but in the clear light of day with a definite measure of the effectiveness of every stroke. The cost in time and energy of teaching this or that supposedly valuable item of education, and the practicability of this or that process of instruction is checked and laid before us by the merciless test of visible results. As a result, an intelligent and earnest teacher is constantly upon her mettle to improve conditions—because they can be improved. Moreover, the work is exhilarating mentally, morally and physically.

Report Cards. There has always been trouble in making truthful report cards. If a pupil is very diligent and yet can not keep up with the class, the teacher has never known what to do about it. The fact that the pupil is lagging behind the arbitrary standard set for class promotion indicates that he is doing poor work. To be honest the teacher should mark accordingly and thus inform the parent. But to mark thus a diligent pupil who is earnestly doing the best he and his ancestry permit him to do, takes a heart harder than most teachers possess. Besides, to do so, hopelessly discourages him who needs all the encouragement he can get.

The situation is clearly impossible of any sensible or serviceable solution. At the end of the term there is more trouble. If the teacher has marked the pupil "poor" throughout, then the failure to be promoted has proven to him the hopelessness and folly of effort. If she has marked him "fair" or "satisfactory," and nevertheless can not promote him, then injustice is added to injury. If she promotes him into the next grade she may ruin him for life. The parent thereupon confronts the teacher with the evidence of her own report, and there is an inexplicable situation.

Under the individual plan this dilemma does not occur. The grade standard is the rate of the slowest pupil exercising reasonable diligence. A pupil, poor in diligence, may fall below the grade standard of progress because of his lack of diligence, but if a pupil of satisfactory diligence should fall below the standard set, it would be evidence that the grade standard, not the pupil, must be corrected. By this system a truthful report, serviceable to pupil and parent, is possible.

Our report cards also have, for most subjects, two other markings—"neatness of written work" and "self-reliance." In order to establish the

habit of neat, legible writing, we insist that all written work, *in every subject*, shall be carefully and neatly done. "Self-reliance" indicates that the pupil does his work by his own initiative—not because he is forced, not because he is urged or cajoled, or artificially stimulated—but that he applies himself to his own work with a businesslike attention to his own interest. A pupil who gives up at slight difficulties, calls for teacher's aid unnecessarily, or is subject to "humors" is not self-reliant. A pupil may be "excellent," "satisfactory" or "poor" in self-reliance, but this marking is quite independent of the mark for "diligence" or "progress." A pupil may be excellent in diligence, or even in progress, because the teacher is continually at his elbow, forcing, admonishing or entreating, but his mark would be "poor" in self-reliance.

To cover the preceding situation—"diligence" and "progress"—a pupil is marked "excellent," "satisfactory" or "poor" in each. If he is very diligent but makes poor progress the facts are duly recorded. Nothing is more important in any situation than to have the facts and causes set forth, to all concerned, in a clear and truthful way.

TYPICAL RECORD SHEETS.

In order to present in concrete form the data of individual rates of progress, two tables of records are herewith submitted. The first comprises the records of 100 pupils in primary reading and the second records of 100 pupils in grammar grade arithmetic. They are not selected records, but taken in alphabetical order just as they come, from our card indexes.

The entries are not completely filled, due to two conditions: (1) the record is complete as far as the pupil has yet made progress (note the right hand date); (2) the pupil did not enter the school or was not put upon the individual system until the date indicated at the left.

The Records in Reading. In the teaching of reading, we have three courses, which for purposes of promotion are distinct and separate: (1) ability to get the meaning; (2) phonics; (3) oral expression. The records given are those of the first—ability to get the meaning. Most of the slow records are accounted for by the fact that we made progress in phonics a condition of promotion in ability to obtain the meaning. But for the past six months, a pupil has been promoted in ability to get meaning regardless of his progress in phonics. The basis of promotion is as follows: for each half grade a number of books, or selected parts of books, are assigned as the reading material of this half grade. One of these books is made the standard or test for promotion. The others are used as drill material preparatory for this test. For example, there are assigned as possible preparatory material for the low third grade reading some twenty-five books ranging in type from Æsop's Fables, Vol. II, Grimm's Fairy Stories, Adventures of a Brownie, Adventures of Pinochio, Fox's Indian Primer, Eskimo Stories, to Stories of the United States for Youngest Readers, and Stories of Great Americans for Little Americans. The final test of acquired ability is power to read at sight fluently and understandingly, typical selections of the last half of the State Third Reader (Stepping Stones to Literature, Third Book).

The test standard of each half grade is placed at the head of each column in the table. It does not mean that every pupil must read *all* the preparatory books, nor even, theoretically, that he should read any of them. The principle is that he should read as many of them as will enable him to read the test book fluently and with understanding. This requirement, of course, varies with different pupils. One pupil may show, by his comprehension of his first preparatory book, his ability to take the test, or it may be necessary to read two, three or all the preparatory books before he is ready for the test book. But whenever the pupil is ready and does pass the test book, he is given a certificate of promotion to the next higher half grade. The test books have been arranged so that the test chapters represent, as fairly as possible, graded stages in increased but usable vocabulary. Portions which involve special and more or less unfamiliar vocabulary, or which show no increase in vocabulary over the previous half grade are elided from the test material. The pupil's promotion is thereby made to depend upon

actual and usable new acquirements of reading power. By this device we have cut out two diseased conditions common, and more or less necessary in teaching reading by the class system: (1) promotion upon a basis merely of the amount of text the class as a whole has covered, or, the time of attendance, without accurate test of efficiency; for this we have substituted ability to pass the grade's requirement *whenever* that standard may be reached; and (2) we have cut out the injustice of requiring pupils to learn, in the early grades, the unusual or technical vocabulary to be found in much poetry or some special descriptive chapter inserted by some incompetent text-maker to satisfy a thoughtless vagary of his personal judgment.

Explanation of Table. In the first column is given a symbol of the pupil's name for purposes of reference.

The second and third columns give the age of the pupil, in years and months, respectively, at the time of beginning the first record listed.

The eight succeeding columns give the number of days the pupil used in completing the half grade indicated at the top, exclusive of absences.

The column of dates on the left indicates the date from the beginning of the first record. The date upon the right is that of the completion of the test record and the time intervening represents the period used in completing the work indicated, inclusive of absences.

The column headed "Total" gives the total of the days. The column headed "ab." shows the number of days absence. The sum of the days and absences accounts for the school days between the dates. The column headed "average" gives the average number of days this pupil has used for each half grade. It is obtained by dividing the total days by the number of half grades indicated.

The number of days in our school half year is 95 and comparison of each actual record with the 95 days furnishes the reader with a key to the relative progress made.

If the figures under the grade headings are read vertically, we may note the variation in progress rates of different pupils doing the same unit of work. If they are read horizontally, we may note the variation in rate of the same pupil as he passes through successive half grades. For illustration, let us take the second horizontal line: 2 J. A. commenced the high third grade at the age of 7 years and 5 months; completed the high third in 64 days, and the low fourth in 76 days. The date of beginning the high third was August 3, 1914, and the completion of the low fourth was March 19, 1915, representing 140 working days and 23 days of absence. The average time for each half grade was 70 days, or 20 to 23 days less than the grade standard of 95 days.

Or, take the longer record 7 O. B. below. This boy, at the age of 7 years and 9 months entered the high first grade and by the successive records of 36, 28, 64, 59, 34, 26, and 64 days for each half-grade, respectively, entered the low fifth grade May 2, 1915; he used 311 days in this progress and was absent a total of 33 days. His average time was 45 days for each of the seven half grades. If he had been in a graded class, it would have taken

him 665 days (7×95) instead of 311 days, provided he made a half grade each half year; and, as later will be shown, he would have completed not the Fifth reader, but the Fourth at best.

Record of Individual Progress. Primary Reading.

	Age		Low 1	High 1	Low 2	High 2	Low 3	High 3	Low 4	High 4	Total days	Average rate	Absences	Dates		
	Years	Months														
1. C. A...	6	8	-----	67	-----	-----	-----	-----	-----	-----	67	-----	13	Jan.	14,'15-	Apr. 3,'15
2. J. A...	8	0	-----	-----	-----	-----	64	76	-----	-----	140	70	23	Aug.	3,'14-	Mar. 9,'15
3. E. A...	7	5	87	70	-----	-----	-----	-----	-----	-----	157	78	46	Apr.	20,'14-	May 18,'15
4. R. A...	7	10	-----	-----	-----	-----	-----	62	57	76	195	65	7	Jan.	4,'14-	Jan. 14,'15
5. R. A...	5	11	84	38	-----	-----	-----	-----	-----	-----	122	61	24	Aug.	3,'14-	May 24,'15
6. N. B...	10	5	-----	-----	-----	-----	-----	-----	-----	68	68	-----	0	Nov.	30,'14-	Apr. 22,'15
7. O. B...	7	9	-----	36	28	60	59	34	26	64	311	45	33	Sept.	19,'13-	May 2,'15
8. J. B...	10	5	-----	-----	-----	-----	-----	-----	36	60	96	48	0	Jan.	5,'15-	May 2,'15
9. J. B...	6	0	44	27	-----	-----	-----	-----	-----	-----	71	36	4	Jan.	4,'15-	Apr. 27,'15
10. W. B...	9	0	-----	-----	-----	-----	-----	-----	93	103	196	98	17	Jan.	5,'14-	Jan. 18,'15
11. R. B...	6	0	92	53	-----	-----	-----	-----	-----	-----	145	73	16	Aug.	3,'14-	Apr. 20,'15
12. T. B...	6	6	89	71	-----	-----	-----	-----	-----	-----	160	80	7	Aug.	4,'14-	Apr. 30,'15
13. S. B...	6	0	54	37	27	75	14	-----	-----	-----	207	42	3	Jan.	5,'14-	Dec. 18,'14
14. E. B...	8	9	-----	-----	-----	-----	58	18	113	52	241	61	5	Jan.	5,'14-	Mar. 18,'15
15. C. B...	5	9	84	89	-----	-----	-----	-----	-----	-----	172	86	6	Aug.	3,'14-	May 17,'15
16. A. B...	6	6	-----	85	93	85	48	-----	-----	-----	311	78	35	Jan.	4,'13-	Mar. 19,'15
17. R. B...	6	9	14	77	49	-----	-----	-----	-----	-----	126	63	15	Aug.	3,'14-	Mar. 16,'15
18. R. B...	7	6	-----	-----	-----	37	43	47	76	51	254	51	7	Aug.	4,'13-	Nov. 17,'14
19. E. B...	6	4	73	30	-----	-----	-----	-----	-----	-----	103	52	48	Aug.	3,'14-	Apr. 3,'15
20. E. B...	8	7	-----	-----	-----	53	49	-----	-----	-----	102	51	24	Nov.	11,'14-	May 21,'15
21. R. B...	8	5	-----	-----	-----	-----	-----	60	100	99	259	87	14	Jan.	5,'14-	May 5,'15
22. J. B...	9	1	-----	-----	62	138	-----	-----	-----	-----	200	100	30	Feb.	24,'14-	Apr. 5,'15
23. E. B...	6	6	87	162	-----	-----	-----	-----	-----	-----	249	125	13	Jan.	6,'14-	Apr. 22,'15
24. V. B...	8	10	-----	-----	-----	-----	-----	96	136	-----	232	116	9	Jan.	4,'14-	Mar. 12,'15
25. H. B...	8	1	-----	-----	-----	-----	43	27	-----	-----	70	35	0	Nov.	13,'14-	Mar. 23,'15
26. O. B...	6	9	-----	76	113	34	-----	-----	-----	-----	223	75	36	Jan.	5,'14-	Apr. 30,'15
27. D. B...	9	0	-----	-----	-----	-----	-----	-----	-----	72	72	-----	18	Oct.	5,'14-	Apr. 4,'15
28. E. B...	6	6	-----	-----	63	54	76	45	31	27	297	50	23	Aug.	4,'13-	Feb. 26,'15
29. V. C...	7	3	61	60	-----	-----	-----	-----	-----	-----	121	61	41	Aug.	3,'14-	May 10,'15
30. E. C...	6	2	86	35	-----	-----	-----	-----	-----	-----	121	62	5	Aug.	3,'14-	Feb. 19,'15
31. E. C...	9	5	-----	-----	-----	-----	-----	-----	-----	-----	98	-----	1	Apr.	14,'13-	Nov. 4,'15
32. W. C...	7	6	21	33	36	54	60	62	-----	-----	256	43	24	Jan.	4,'14-	May 26,'15
33. A. C...	6	6	-----	51	59	59	36	44	25	35	309	45	34	Sept.	3,'13-	Apr. 29,'15
34. F. C...	6	9	68	89	50	33	-----	-----	-----	-----	240	60	34	Jan.	4,'14-	May 10,'15
35. H. C...	6	9	-----	-----	30	35	-----	-----	-----	-----	65	33	8	Jan.	4,'15-	Apr. 21,'15
36. R. D...	7	10	-----	-----	-----	-----	88	97	89	-----	274	92	13	Jan.	5,'14-	May 25,'15
37. D. G...	9	2	-----	-----	-----	-----	-----	27	34	26	87	29	5	Sept.	3,'14-	Feb. 3,'15
38. D. D...	5	1	75	59	-----	-----	-----	-----	-----	-----	134	67	21	Aug.	3,'14-	Apr. 14,'15
39. M. D...	8	0	-----	68	88	88	26	-----	-----	-----	270	68	6	Sept.	3,'13-	Feb. 10,'15
40. G. D...	9	6	-----	-----	-----	-----	-----	72	34	-----	106	53	5	Sept.	16,'14-	Mar. 16,'15
41. L. D...	6	6	85	-----	-----	-----	-----	-----	-----	-----	85	-----	6	Aug.	3,'14-	Jan. 5,'15
42. M. D...	8	0	-----	-----	-----	-----	48	18	107	49	222	56	1	Jan.	4,'14-	Feb. 4,'15
43. H. D...	7	0	-----	-----	65	67	60	49	42	-----	272	54	40	Aug.	4,'13-	May 26,'15
44. A. D...	7	4	-----	-----	39	42	43	20	40	55	239	40	25	May	2,'13-	Oct. 15,'14
45. L. D...	6	0	67	-----	-----	-----	-----	-----	-----	-----	67	-----	26	Sept.	10,'14-	Feb. 11,'15
46. N. D...	6	4	71	112	17	7	0	0	24	31	262	33	6	Jan.	5,'14-	Mar. 5,'15
47. H. E...	6	0	-----	50	67	21	60	26	36	-----	260	44	28	Jan.	5,'14-	May 3,'15
48. L. E...	9	5	-----	-----	-----	-----	-----	49	63	92	204	68	38	Aug.	18,'14-	May 17,'15
49. L. E...	6	0	79	35	-----	-----	-----	-----	-----	-----	114	57	0	Aug.	18,'14-	Feb. 23,'15
50. R. E...	6	0	-----	-----	-----	-----	55	60	-----	-----	115	58	46	Aug.	5,'14-	Apr. 15,'15
51. E. F...	5	10	80	82	-----	-----	-----	-----	-----	-----	162	81	21	Aug.	3,'13-	June 3,'14
52. O. F...	6	6	-----	78	74	13	19	7	9	10	210	30	44	Jan.	4,'14-	May 24,'15
53. W. F...	8	6	-----	-----	-----	-----	43	-----	-----	-----	43	-----	0	Jan.	4,'15-	Mar. 26,'15
54. B. F...	6	6	-----	56	23	27	101	44	54	-----	305	51	49	Aug.	4,'13-	Apr. 21,'15
55. G. F...	6	7	72	31	30	29	-----	-----	-----	-----	162	41	18	Aug.	5,'14-	May 18,'15
56. R. F...	6	0	89	55	-----	-----	-----	-----	-----	-----	144	72	8	Aug.	20,'14-	Apr. 26,'15
57. W. F...	6	9	-----	77	105	35	37	-----	-----	-----	254	64	15	Jan.	5,'14-	Apr. 26,'15
58. P. F...	6	5	-----	162	88	-----	-----	-----	-----	-----	250	125	36	Jan.	4,'14-	May 2,'15
59. E. F...	6	0	71	-----	-----	-----	-----	-----	-----	-----	71	-----	6	Jan.	4,'15-	May 21,'15
60. R. G...	10	0	-----	-----	-----	-----	-----	-----	58	38	96	48	0	Jan.	5,'15-	Aug. 18,'15
61. J. G...	10	8	-----	-----	43	108	49	-----	-----	-----	200	77	17	Aug.	12,'13-	Aug. 20,'14
62. V. G...	7	0	-----	-----	-----	20	31	30	-----	-----	81	27	25	Oct.	26,'14-	Apr. 4,'15
63. M. G...	10	9	-----	-----	-----	-----	38	50	89	2	179	45	15	Jan.	4,'14-	Dec. 17,'15
64. J. G...	8	6	-----	144	120	24	67	-----	-----	-----	355	89	17	Aug.	4,'13-	May 20,'15

Record of Individual Progress. Primary Reading—Continued.

	Age		Low 1	High 1	Low 2	High 2	Low 3	High 3	Low 4	High 4	Total days	Average rate	Absences	Dates		
	Years	Months														
65. E. G...	7	5	-----	-----	-----	-----	-----	58	62	86	206	69	33	Jan.	5,'14-	Mar. 10,'15
66. E. H...	7	0	-----	80	159	36	-----	-----	-----	-----	274	92	10	Jan.	5,'14-	May 19,'15
67. W. H...	10	2	-----	-----	-----	-----	-----	69	73	46	188	63	11	Jan.	5,'13-	Jan. 13,'15
68. F. H...	9	9	-----	-----	-----	-----	-----	100	59	75	233	78	63	Jan.	5,'14-	May 6,'15
69. H. H...	9	4	-----	-----	-----	-----	93	0	97	88	278	70	10	Jan.	5,'14-	May 26,'15
70. A. H...	9	0	-----	-----	-----	-----	28	41	43	39	151	38	20	Aug.	3,'14-	Apr. 29,'15
71. H. H...	7	2	-----	-----	73	54	-----	-----	-----	-----	127	64	20	Aug.	3,'14-	Mar. 4,'15
72. L. H...	6	6	81	20	-----	-----	-----	-----	-----	-----	101	52	6	Aug.	3,'14-	Feb. 9,'15
73. B. H...	9	0	-----	-----	-----	-----	30	39	31	-----	100	34	48	Aug.	17,'14-	Mar. 26,'15
74. G. H...	8	0	-----	-----	-----	-----	41	17	-----	-----	58	29	2	Dec.	9,'13-	Mar. 26,'14
75. O. H...	6	9	-----	38	37	-----	-----	-----	-----	-----	75	38	1	Jan.	4,'15-	Apr. 26,'15
76. G. H...	7	0	-----	90	100	122	-----	-----	-----	-----	312	104	0	Aug.	3,'13-	Feb. 16,'15
77. A. H...	7	7	-----	-----	37	60	37	100	67	-----	301	62	5	Aug.	14,'12-	Feb. 3,'15
78. E. H...	8	0	-----	178	-----	-----	-----	-----	-----	-----	178	3	0	Aug.	14,'14-	May 9,'15
79. F. H...	6	0	81	64	-----	-----	-----	-----	-----	-----	145	73	34	Aug.	3,'14-	May 4,'15
80. A. H...	7	0	-----	85	77	107	47	36	-----	-----	352	70	21	Aug.	4,'14-	Mar. 24,'15
81. H. J...	6	7	78	93	37	-----	-----	-----	-----	-----	208	70	58	Jan.	5,'14-	Mar. 2,'15
82. L. H...	7	6	-----	-----	95	83	57	28	-----	-----	263	66	17	Jan.	5,'14-	May 24,'15
83. E. J...	7	8	-----	-----	-----	-----	57	54	51	52	214	54	26	Aug.	26,'13-	Nov. 16,'14
84. H. J...	7	5	-----	-----	-----	47	39	47	64	74	271	55	11	Aug.	13,'13-	Apr. 25,'15
85. R. J...	8	1	-----	-----	182	-----	-----	-----	-----	-----	182	-----	12	Aug.	3,'14-	May 23,'15
86. D. J...	8	9	-----	-----	-----	-----	44	31	57	-----	132	44	12	Sept.	14,'14-	May 5,'15
87. D. J...	10	7	-----	-----	-----	-----	14	44	80	-----	138	45	31	Oct.	8,'14-	May 2,'15
88. H. J...	7	0	-----	93	37	-----	-----	-----	-----	-----	130	65	24	Apr.	3,'14-	Mar. 2,'15
89. E. J...	8	4	-----	-----	73	93	56	-----	-----	-----	222	74	41	Dec.	5,'13-	May 4,'15
90. C. K...	8	6	-----	-----	-----	-----	-----	43	47	-----	90	45	36	Oct.	5,'14-	Apr. 30,'15
91. J. K...	8	4	-----	-----	-----	72	87	-----	-----	-----	159	80	20	Sept.	3,'13-	Feb. 8,'15
92. K. K...	7	3	-----	-----	-----	44	75	83	-----	-----	202	78	24	Dec.	8,'13-	Feb. 8,'15
93. N. K...	8	4	-----	-----	-----	-----	-----	96	0	105	201	77	2	Jan.	5,'14-	Jan. 18,'15
94. K. K...	5	10	-----	80	111	26	42	-----	-----	-----	259	65	16	Jan.	4,'14-	May 7,'15
95. E. K...	7	0	-----	77	108	91	-----	-----	-----	-----	276	92	11	Jan.	4,'14-	May 24,'15
96. W. K...	6	5	111	-----	-----	-----	-----	-----	-----	-----	111	-----	4	Aug.	3,'14-	Feb. 8,'15
97. M. L...	6	5	83	36	34	14	-----	-----	-----	-----	167	43	13	Aug.	4,'14-	May 14,'15
98. H. L...	6	0	63	52	-----	-----	-----	-----	-----	-----	115	58	43	Aug.	10,'14-	Apr. 21,'15
99. J. M...	8	2	-----	-----	-----	-----	53	51	43	9	156	39	34	Aug.	3,'14-	May 26,'15
100. E. M...	7	8	-----	-----	91	55	69	91	49	-----	355	71	16	Aug.	4,'13-	May 11,'15

Records in Arithmetic (Grammar Grade). The second series gives the grade records of the first 100 pupils from our alphabetical card lists. The dates and absences are not given. Features similar to those in primary reading are to be noted.

Record of Individual Progress. Grammar Grade Arithmetic.

	Low 5	High 5	Low 6	High 6	Low 7	High 7	Low 8	Total hours	Average for half grade
1. M. A.			49	128				179	89
2. J. A.	75							75	
3. K. A.			39					39	
4. F. A.				66				66	
5. Q. A.	45							45	
6. F. B.				24				24	
7. M. B.		103						103	
8. J. B.	31							31	
9. M. B.	70	78	91	64				303	76
10. N. B.				69	30	74	105	269	68
11. L. B.	44							44	
12. C. B.					43	46		89	45
13. E. B.					37	89	40	166	57
14. B. B.			81	43				124	62
15. W. B.	41	82	47					170	57
16. S. B.				33	40	35		108	36
17. G. B.	94	63						157	79
18. B. B.	53	24	77	118	33	18		323	54
19. L. B.	22	72	131					225	75
20. H. B.	83							83	
21. G. B.						65	88	153	77
22. F. B.					39	50	59	148	59
23. G. B.	96	86	57					239	80
24. M. B.		79	77	68	48	22		294	59
25. B. B.		33	65	80	38			216	54
26. D. B.	45	45						90	45
27. N. B.	38	38						76	38
28. M. B.	115	67						182	91
29. B. B.		81	100	87				268	90
30. H. B.		63	46	80	63	36		288	58
31. W. B.	79	83	85	79				326	82
32. C. B.				45	54	62	54	215	54
33. F. B.					43	110	51	204	68
34. L. B.	80	60						140	70
35. D. C.	85	77	80					242	81
36. A. C.				81	42	22	70	215	54
37. G. C.						48	51	99	50
38. J. C.	63	85	103					251	84
39. B. C.				63	27	51	81	222	56
40. C. C.	46	50						96	48
41. A. C.				49	75	47	82	250	64
42. A. C.	75	93	151					319	107
43. R. C.			95	61	46	86		288	72
44. A. C.	35	28						63	32
45. R. C.			33					33	
46. S. C.		63	53	137				253	85
47. C. C.					10	65	35	110	37
48. M. C.				94	69	66		229	77
49. O. C.				44	87	112		243	81
50. A. C.		53	111	66	30			293	74
51. G. C.		67	59	47				173	58
52. B. C.	76	62						138	69
53. E. C.			80					80	
54. A. D.		102	71					173	87
55. A. D.		80	91	86	54	8		319	64
56. F. D.	70	60						130	65
57. P. D.	70	52	48	38	24			232	47
58. R. E.				78	86	56	55	275	69
59. M. E.	32	88	89	63				272	68
60. M. E.	128							128	
61. R. F.			60					60	
62. H. F.			33	95	96	42		266	67
63. G. F.				108	67	35	69	279	70
64. F. F.	81							81	
65. B. F.				66	44	29	41	180	45
66. C. F.	77	59	61	31				228	57
67. P. F.				34	77	74	77	262	66
68. H. F.				122	91	34	62	309	78
69. B. F.				128	62	76	49	315	79
70. W. G.	49	98	91					234	78
71. F. F.				53				53	
72. L. G.	81	96	78	72				327	82

Record of Individual Progress. Grammar Grade Arithmetic—Continued.

	Low 5	High 5	Low 6	High 6	Low 7	High 7	Low 8	Total hours	Average for half grade
73. G. G.	76	58						134	67
74. M. G.	71	81	58					210	70
75. R. G.				26	42			68	34
76. H. G.	49	104	109					262	88
77. E. G.			28	142				170	85
78. M. G.				74	68			142	71
79. A. G.				45	103	64	81	293	74
80. L. G.			52	51	57	48	61	269	54
81. L. G.		75	87	56	68			286	72
82. R. G.	13	36	29	53				131	33
83. H. G.	81							81	
84. F. G.				70	51	82	52	255	64
85. L. H.				154	79			233	117
86. M. H.	31							31	
87. E. H.				77	75	51	34	239	60
88. R. H.	104	151						255	128
89. A. H.							41	41	
90. U. H.	38							38	
91. Z. H.			61	85	59	71		276	69
92. W. H.					37	66	20	123	41
93. R. H.		29	72	93	81	21		299	60
94. M. H.		32	62	67	80			241	61
95. E. H.			46	129	75			250	84
96. R. H.		82	95	76	66			319	80
97. C. H.	96	117						213	107
98. L. H.	96	92	51					239	80
99. B. H.	32	75	90	31	18			246	50
100. R. H.	88	80						168	84

FEATURES TO BE NOTED.

Each Individual Varies. *That the variation in the rates of the same pupil, in different grades, is often as great as that between different pupils in the same grade.*

The degree of general mentality does not show itself as a conspicuous factor in many of our records. There are a very few records which are continuously rapid, continuously slow or continuously medium. Variation is the rule—due to a chief extent to variation in ambition, diligence, interest or to particular difficulties. Probably a more common cause has been, thus far, the imperfection of the course of study, exercise books, new methods of instruction, unavoidable in the pioneer stages of breaking new ground. The estimate may be ventured that over half the slow records are due to this latter cause and they are therefore not likely to repeat themselves.

This wide variation of individual rates is a matter for serious consideration by the many schools with systems of promotions based upon the assumption of definite groups of "rapid," "medium," and "slow" pupils. Pupils of this kind, all of our records indicate, are exceptional and represent a very small per cent. If such "types" do not exist, such systems have no basis.

A Slow Record Not Permanently Disabling. That pupils recover from the difficulties indicated by a slow record and seem thereafter none the worse for the experience—under the class system a pupil who once gets out of the lockstep rarely recovers from the shock and loss. He loses bricks in the foundation and the only remedy (if it is one) is to require him to

repeat the grade. Under the individual system, the pupil who meets a difficulty, wrestles with it, conquers it in his own time, and he proceeds with the glory of conquest and is none the worse in point of thoroughness. Note 49 N. D., whose second record was 112 days, yet who completes the primer, first, second, third, and fourth readers in 262 days or in less than a year and a half. His struggle and delay with the second reader seems, in fact, to give him strength, for he tosses off the others in short order. Under the lockstep, possibly, this boy would have repeated the low second and have become hopelessly discouraged.

The Chief Cause of Retardation in Classes. That few pupils seem to have their difficulties in the same grade—the difficulties, so far as slow records may indicate therein, are distributed differently for each. This fact signifies that slowness of any pupil at any particular point, so far as the cause is a difficulty of comprehension, is due to his own difficulty—not to that of others. The time he uses to repair his weakness is used to tamp down his comprehension thoroughly—it is not wasted time due to waiting for others to comprehend something he already knows. Fifty different pupils may have fifty different sticking places and under the class system, all wait for each; or else drag one another ahead before the difficulties in foundation are safely overcome. We have here brought in view the chief causes of retardation—the lockstep system can not permit each pupil to take the time to repair his own shortcomings at the right times. Consequently a large number must pass on, failing to grasp essentials which constitute the foundation.

Age Not an Important Factor. That the age of the pupil in years is not an important nor significant factor. The age of pupils in years since birth, within the limits of two or three years, has received altogether too much emphasis. Children eight years of age are frequently only six years in mental development, and vice versa.

VARIATION IN RATES OF PROGRESS.

The vital question upon which hinges the essential issue of instruction by classes is whether or not the variation in the rates of progress of different pupils is really so great as to demand the overthrow of this system of education.

This variation is very easily and accurately demonstrable. If, in any class, we arrange conditions to allow each pupil to make his progress at his own rate, giving instruction individually, we may record the time each has used in completing the same unit of work. These time records may be compared one with the other and the variation becomes a matter of black and white. In the fact subjects, such as number arithmetic, reading, etc., the comparison admits of very exact measurements.

PRIMARY READING.

Such records are submitted below. The table gives such data compiled from the records in reading. The number of days each pupil has used to complete the successive half grades is recorded. The records have been arranged in the order of fastest to slowest.

Explanation of Tables. Taking, for illustration, the low first grade, the table shows that the fastest pupil completed the low first grade (primer) in 33 days, the next fastest used 43 days, the next 45 days, and so on to the slowest (111 days). The variation for completing the first half grade therefore is between the extreme limits of 33 and 111 days, from fastest to slowest.

In the high first grade, the fastest pupil completed the State First Reader (Progressive Road to Reading) in 14 days and the slowest in 180 days. The fastest pupil completed the low second grade, the State Second Reader (Brooks' Second Reader) in 17 days and the slowest in 172 days; and so with each successive series. This does not mean, of course, that the fastest pupil in the primer is the fastest in the first reader, as reference to the preceding table will show. The fastest in the second reader was the ninth from the slowest in the first reader.

Low 1: State Primer (Free and Treadwell)—33, 43, 44, 45, 46, 50, 54, 58, 61, 63, 63, 67, 67, 67, 68, 70, 71, 71, 72, 73, 73, 74, 75, 77, 78, 79, 80, 81, 81, 83, 84, 84, 84, 86, 86, 87, 87, 89, 89, 89, 90, 91, 92, 111, 111. Total days—3,327. Total pupils—45.

High 1: State First Reader (Progressive Road to Reading, Book 1)—14, 20, 21, 25, 27, 29, 30, 31, 35, 35, 36, 37, 38, 38, 46, 47, 49, 49, 50, 50, 51, 52, 53, 55, 56, 59, 60, 64, 65, 65, 66, 67, 68, 70, 71, 76, 77, 77, 77, 78, 80, 80, 80, 82, 82, 83, 85, 85, 86, 89, 89, 90, 93, 93, 98, 98, 99, 112, 144, 162, 162, 165, 176, 178, 180. Total days—4,785. Total pupils—65.

Low 2: State Second Reader (Brooks' Second Reader)—17, 23, 27, 28, 30, 30, 30, 32, 33, 34, 36, 37, 37, 37, 37, 37, 39, 43, 48, 50, 59, 59, 62, 63, 64, 65, 65, 67, 68, 68, 71, 73, 73, 73, 74, 77, 87, 88, 88, 89, 89, 89, 90, 91, 92, 93, 95, 96, 100, 104, 105, 108, 111, 113, 120, 144, 158, 164, 172, 182. Total days—4,434. Total pupils—60.

High 2: State Second Reader (Brooks' Second Reader)—7, 13, 19, 20, 21, 21, 24, 24, 26, 27, 29, 29, 33, 34, 34, 35, 35, 35, 36, 36, 37, 39, 42, 44, 47, 47, 53, 54, 54, 55, 55, 59, 60, 60, 64, 67, 69, 69, 72, 75, 76, 83, 85, 87, 88, 91, 93, 102, 109, 109, 116, 117, 138. Total days—2,954. Total pupils—53.

Low 3: State Third Reader (Stepping Stones to Literature, Book III)—0, 8, 14, 14, 14, 21, 21, 26, 28, 29, 30, 31, 35, 36, 37, 37, 37, 38, 39, 41, 41, 42, 43, 43, 43, 44, 47, 48, 48, 49, 49, 50, 53, 53, 53, 54, 55, 55, 56, 57, 57, 58, 59, 60, 60, 60, 62, 64, 64, 65, 66, 67, 69, 69, 72, 73, 75, 76, 83, 87, 88, 93, 97, 101, 106. Total days—3,350. Total pupils—65.

High 3: State Third Reader (Stepping Stones to Literature, Book III)—0, 0, 7, 17, 18, 18, 20, 24, 25, 26, 26, 27, 27, 28, 29, 30, 31, 33, 34, 36, 37, 39, 39, 39, 40, 41, 43, 44, 44, 44, 44, 45, 45, 47, 47, 47, 49, 50, 51, 54, 54, 57, 58, 58, 60, 60, 60, 61, 62, 67, 69, 72, 74, 75, 76, 83, 84, 84, 88, 91, 96, 96, 97, 100, 100, 169. Total days—3,396. Total pupils—66.

Low 4: State Fourth Reader (Stepping Stones to Literature, Book IV)—0, 9, 17, 18, 24, 25, 26, 28, 31, 31, 34, 34, 36, 36, 38, 40, 41, 42, 43, 43, 43, 44, 45, 46, 46, 47, 49, 51, 52, 53, 54, 54, 57, 57, 58, 59, 62, 62, 63, 64, 64, 65, 67, 69, 73, 75, 76, 80, 89, 89, 93, 94, 97, 98, 100, 107, 113, 133, 136. Total days—3,380. Total pupils—59.

High 4: State Fifth Reader (Stepping Stones to Literature, Book V)—2, 7, 9, 10, 13, 24, 25, 26, 27, 27, 35, 38, 39, 46, 47, 49, 51, 52, 52, 53, 55, 59, 59, 60, 60, 64, 65, 68, 72, 74, 76, 81, 86, 88, 88, 93, 93, 94, 98, 99, 103, 105, 106. Total days—2,478. Total pupils—43.

Variation in Rates of Progress in Integer Numbers.

The second table gives the variation in the rates of different pupils in the subject of the integer number—column addition, subtraction, multiplication, short division, compound multiplication and long division. These records begin in the second grade with column addition and extend through subtraction, multiplication, short division, compound multiplication and long division. Pupils enter school with varying degrees of number knowledge. Each is taken at his point in progress and in a preparatory course is taught, if he is not already proficient, to count serially, by 10's, by 5's, by 2's, even and odd, to add 10 and any number, 20 and any number, 30 and any number, etc. When this preparatory course, which may take any time from a month to the entire first year, is completed the pupil is rated as "low second grade." The work of this half grade is to learn all the additive combinations and column addition represented by the completion of the first half of Exercise Book No. 21.

The high second grade covers the completion of Exercise Book No. 21 and the first half of Exercise Book No. 22, representing subtraction and multiplication.

The low third grade covers short division; the high third, compound multiplication and long division and integer problems. In the low and high fourth, we are now doing fractions, decimals with problems—the work usually occupying the fifth grade of class systems.

The time spent by pupils in arithmetic varies somewhat in the different grades and also with pupils. The usual time given to arithmetic by us has been 30 minutes daily in the first grade, 40 minutes in the second and 60 minutes in the third and fourth grades, distributed in periods of 10 minutes in the primary grades. The ancient dogma that children can not and must not be taught arithmetic before they are eight years old rests upon evidence of doubtful tradition. In this instance, as in many others, it appears that age, based upon years since birth, is not a very stable or reliable factor in educational issues. Some people reach eighty years of life and never reach eight years of comprehension.

Addition—15, 16, 19, 20, 20, 21, 23, 23, 24, 26, 26, 27, 28, 29, 29, 29, 30, 30, 30, 30, 31, 32, 33, 34, 36, 37, 39, 41, 42, 42, 42, 42, 43, 43, 43, 43, 44, 44, 44, 44, 45, 46, 46, 47, 48, 48, 48, 48, 49, 50, 51, 51, 51, 52, 53, 54, 55, 57, 58, 59, 61, 62, 62, 69, 73, 74, 74, 74, 85, 86, 87, 92, 96, 116, 117, 120. Total days—3,658. Total pupils—76.

Subtraction and Multiplication—26, 36, 38, 39, 41, 47, 47, 48, 50, 50, 50, 52, 52, 53, 54, 54, 58, 59, 59, 60, 61, 61, 62, 63, 63, 64, 65, 65, 65, 66, 67, 67, 68, 68, 74, 76, 82, 84, 85, 86, 87, 87, 88, 88, 93, 93, 95, 99, 102, 102, 104, 118, 120, 145. Total days—3,786. Total pupils—54.

Short Division—17, 18, 23, 23, 25, 29, 29, 30, 31, 31, 32, 32, 32, 33, 33, 34, 35, 36, 37, 38, 39, 40, 41, 41, 41, 41, 42, 42, 43, 43, 44, 45, 45, 46, 47, 50, 51, 56, 58, 58, 59, 61, 62, 62, 66, 67, 68, 68, 68, 72, 73, 73, 74, 74, 77, 77, 79, 81, 82, 84, 85, 89, 92, 94, 97, 100, 100, 120. Total days—3,715. Total pupils—68.

Compound Multiplication and Long Division—15, 21, 25, 30, 31, 32, 33, 34, 35, 35, 43, 43, 43, 44, 44, 46, 46, 48, 50, 51, 51, 51, 53, 55, 55, 59, 60, 60, 61, 64, 65, 66, 67, 67, 68, 69, 69, 69, 70, 70, 72, 80, 80, 82, 82, 82, 85, 91, 92, 95, 96, 96, 100, 100, 102, 105, 109, 119, 120, 126. Total days—3,912. Total pupils—60.

Variation in Rates of Progress in Arithmetic.

Addition and Subtraction of Fractions and Decimals, and Text Problems—13, 19, 21, 21, 22, 23, 25, 27, 31, 31, 31, 32, 32, 33, 33, 35, 35, 35, 37, 38, 38, 39, 41, 44, 44, 45, 45, 45, 46, 46, 48, 49, 50, 51, 51, 53, 54, 55, 56, 57, 57, 57, 58, 58, 59, 59, 59, 60, 61, 62, 63, 63, 65, 65, 65, 65, 68, 70, 70, 70, 71, 71, 72, 72, 73, 73, 73, 74, 74, 74, 75, 75, 75, 76, 76, 76, 76, 77, 78, 78, 78, 78, 78, 78, 79, 79, 79, 80, 80, 80, 80, 80, 81, 81, 81, 81 82, 83, 83, 84, 85, 85, 85, 85, 85, 86, 87, 87, 88, 88, 93, 94, 96, 96, 96, 99, 104, 108, 114, 115, 118, 120, 127, 128, 132. Total days—8,380. Total pupils—125.

Multiplication and Division of Fractions and Decimals; Denominate Numbers. Text Problems—11, 22, 22, 24, 28, 28, 29, 31, 32, 33, 35, 36, 36, 36, 37, 37, 38, 38, 40, 42, 42, 44, 45, 45, 46, 48, 49, 49, 49, 50, 50, 51, 51, 52, 53, 54, 54, 55, 55, 57, 58, 59, 60, 60, 61, 61, 62, 62, 62, 63, 63, 63, 63, 66, 66, 67, 67, 68, 69, 70, 71, 72, 73, 74, 75, 75, 75, 76, 76, 76, 76, 77, 77, 78, 78, 78, 79, 79, 80, 80, 80, 80, 81, 81, 81, 81, 82, 82, 82, 82, 82, 83, 83, 84, 85, 86, 86, 87, 87, 87, 88, 88, 89, 89, 90, 91, 91, 92, 92, 93, 94, 94, 96, 98, 99, 100, 102, 102, 103, 103, 104, 108, 111, 115, 116, 117, 128, 131, 151. Total days—9,126. Total pupils—130.

Advanced State Text to Percentage Review and Advance—22, 24, 24, 26, 28, 29, 29, 29, 31, 31, 31, 33, 33, 33, 33, 36, 36, 37, 39, 41, 42, 43, 44, 44, 45, 46, 46, 46, 46, 47, 48, 48, 49, 50, 50, 51, 52, 53, 53, 53, 53, 53, 53, 54, 55, 55, 56, 57, 57, 58, 58, 59, 60, 60, 61, 61, 62, 62, 62, 62, 63, 64, 65, 66, 66, 66, 68, 68, 69, 71, 71, 72, 74, 74, 75, 75, 76, 77, 77, 78, 78, 79, 80, 80, 80, 80, 81, 81, 81, 82, 85, 87, 88, 89, 89, 90, 90, 90, 91, 91, 91, 91, 92, 92, 93, 94, 94, 94, 94, 95, 95, 97, 98, 100, 103, 106, 109, 109, 110, 113, 114, 118, 121, 128, 131, 132, 144, 151. Total days—8,855. Total pupils—128.

Cases I and II of Percentage, State Text and Exercise Book No. 29—24, 26, 29, 31, 31, 33, 33, 34, 38, 41, 43, 43, 43, 44, 44, 45, 45, 45, 45, 46, 46, 47, 48, 49, 51, 51, 52, 52, 52, 52, 53, 53, 54, 54, 56, 56, 58, 60, 60, 61, 61, 61, 62, 62, 62, 63, 63, 63, 63, 64, 64, 64, 65, 66, 66, 66, 67, 68, 69, 70, 71, 71, 72, 72, 74, 74, 74, 75, 76, 77, 77, 77, 78, 78, 78, 79, 79, 79, 80, 80, 80, 81, 81, 81, 82, 82, 82, 82, 82, 83, 83, 83, 83, 85, 85, 86, 86, 87, 87, 87, 89, 90, 90, 90, 91, 91, 93, 93, 93, 94, 95, 95, 95, 99, 100, 102, 106, 106, 108, 108, 110, 114, 115, 118, 121, 122, 128, 128, 129, 131, 137, 142, 150, 154. Total days—10,116. Total pupils—135.

Case III of Percentage, Commission, Banking and Interest; Advanced State Text and Exercise Book No. 30—10, 14, 18, 24, 26, 27, 28, 29, 30, 30, 33, 34, 34, 34, 34, 34, 35, 37, 37, 37, 37, 38, 38, 38, 39, 39, 39, 40, 40, 41, 42, 42, 42, 42, 42, 43, 43, 44, 45, 45, 46, 46, 46, 47, 47, 48, 49, 50, 50, 50, 51, 53, 54, 54, 54, 54, 55, 57, 57, 59, 62, 62, 63, 63, 65, 65, 66, 67, 67, 67, 67, 67, 68, 68, 68, 69, 69, 71, 75, 75, 75, 75, 76, 77, 77, 79, 80, 80, 81, 82, 82, 83, 84, 84, 86, 87, 88, 91, 95, 95, 96, 103, 125, 144, 146, 151. Total days—6,197. Total pupils—106.

Trade Discount, Insurance, Taxes, Duties with Review—8, 13, 13, 16, 17, 18, 19, 19, 21, 21, 22, 22, 25, 27, 29, 32, 33, 34, 35, 35, 35, 36, 36, 36, 37, 37, 38, 38, 39, 39, 42, 42, 44, 46, 46, 46, 47, 48, 48, 50, 50, 51, 51, 51, 52, 52, 54, 56, 57, 57, 57, 58, 62, 63, 64, 64, 65, 65, 66, 66, 67, 69, 69, 70, 70, 71, 71, 72, 73, 74, 74, 76, 78, 81, 82, 82, 83, 86, 87, 89, 99, 110, 112, 121. Total days—4,416. Total pupils—84.

Areas of Plane Figures, Square Root, and Applications (Exercise Books Nos. 31 and 32)—20, 23, 26, 35, 35, 35, 36, 38, 40, 40, 41, 42, 42, 44, 45, 46, 47, 49, 51, 51, 52, 52, 53, 53, 54, 54, 54, 55, 55, 57, 59, 59, 61, 62, 62, 64, 65, 67, 69, 70, 77, 77, 80, 81, 81, 82, 86, 87, 88, 100, 101, 105. Total days—2,996. Total pupils—52.

Variation in Rates of Progress in History.

Primary Text (Thomas' Primary United States History)—30, 32, 33, 33, 35, 35, 35, 36, 38, 38, 39, 40, 40, 40, 40, 40, 41, 41, 42, 42, 42, 43, 43, 45, 45, 48, 48, 48, 49, 49, 49, 49, 49, 49, 52, 52, 53, 55, 55, 56, 56, 57, 58, 58, 58, 59, 60, 61, 64, 65, 66, 67, 68, 68, 68, 69, 72, 72, 73, 74, 74, 74, 75, 79, 82, 82, 83, 83, 84, 90, 93, 95, 97, 100, 105, 111, 113, 115. Total days—4,657. Total pupils—78.

Variation in Rates of Progress in History.

Completion of first half of State Series Text (McMaster's Brief)—19, 26, 28, 28, 29, 31, 32, 38, 38, 38, 38, 39, 39, 40, 40, 41, 41, 43, 43, 44, 45, 45, 47, 48, 50, 50, 52, 53, 53, 54, 55, 59, 59, 61, 62, 64, 64, 65, 65, 68, 68, 71, 72, 74, 76, 76, 78, 78, 78, 79, 79, 81, 82, 82, 82, 85, 85, 86, 86, 88, 89, 89, 89, 90, 91, 91, 92, 92, 92, 92, 93, 93, 93, 94, 95, 96, 98, 99, 100, 101, 101, 102, 102, 102, 104, 105, 106, 109, 111, 113, 118, 119, 120, 122, 123, 123, 123, 124, 129, 130, 130, 136, 140. Total days—7,981. Total pupils—103.

Variation in Rates of Progress in American History.

Last half of State Series Text (McMaster's)—24, 28, 30, 32, 33, 33, 36, 36, 38, 40, 40, 41, 45, 46, 47, 48, 51, 51, 51, 52, 52, 53, 53, 54, 54, 54, 56, 56, 57, 57, 59, 61, 61, 62, 63, 63, 63, 63, 63, 64, 64, 65, 66, 67, 67, 68, 68, 68, 68, 69, 70, 71, 71, 71, 71, 71, 72, 73, 73, 74, 74, 74, 75, 75, 77, 77, 77, 77, 79, 79, 79, 79, 80, 80, 84, 85, 86, 88, 89, 91, 91, 93, 93, 96, 99, 99, 99, 101, 101, 102, 104, 106, 106, 107, 108, 134, 152. Total days—6,743. Total pupils—97.

Variation in Rates of Progress in Grammar (1).

20, 23, 30, 36, 36, 36, 37, 38, 38, 40, 45, 45, 46, 46, 46, 46, 46, 47, 47, 47, 49, 49, 50, 50, 50, 52, 52, 52, 52, 52, 52, 53, 53, 54, 54, 54, 55, 55, 55, 55, 56, 56, 57, 57, 57, 58, 58, 58, 58, 58, 58, 59, 59, 60, 60, 61, 61, 62, 62, 62, 63, 63, 63, 63, 64, 64, 64, 65, 66, 67, 67, 70, 70, 71, 71, 72, 72, 74, 75, 75, 75, 79, 79, 79, 81, 83, 87, 90, 92, 98, 106. Total days—5,380. Total pupils—92.

Variation in Rates of Progress in Grammar (2).

24, 27, 28, 29, 31, 32, 33, 35, 37, 39, 39, 39, 39, 41, 41, 41, 41, 42, 42, 42, 43, 43, 44, 44, 45, 45, 46, 46, 46, 46, 47, 47, 47, 48, 48, 48, 48, 48, 49, 50, 50, 50, 51, 51, 51, 51, 52, 52, 52, 52, 53, 54, 55, 55, 55, 56, 56, 57, 57, 57, 57, 57, 57, 58, 58, 59, 59, 60, 62, 62, 63, 63, 64, 65, 65, 65, 66, 66, 67, 67, 69, 69, 70, 70, 70, 71, 72, 74, 75, 78, 79, 87, 95. Total days—4,936. Total pupils—93.

Variation in Rates of Progress in Grammar (3).

24, 25, 27, 28, 30, 32, 34, 35, 35, 36, 37, 37, 37, 38, 38, 39, 40, 41, 41, 43, 43, 44, 45, 46, 46, 46, 46, 46, 47, 48, 49, 49, 49, 49, 51, 51, 52, 52, 52, 53, 54, 54, 55, 55, 55, 57, 58, 59, 61, 61, 62, 63, 63, 64, 64, 65, 66, 68, 69, 70, 72, 72, 73, 74, 74, 74, 74, 75, 75, 77, 78, 78, 81, 82, 83, 84, 85, 87, 87, 88, 91, 91, 94, 102, 102, 107, 110. Total days—5,153. Total pupils—87.

Variation in Rates of Progress in Language (Exercise Book No. 42).

15, 18, 19, 20, 21, 23, 23, 25, 27, 28, 28, 28, 28, 28, 29, 29, 29, 29, 31, 31, 32, 32, 32, 32, 34, 35, 35, 36, 36, 36, 37, 37, 38, 39, 40, 41, 42, 43, 43, 43, 45, 45, 46, 46, 47, 47, 49, 49, 54, 54, 54, 56, 57, 57, 58, 58, 58, 58, 59, 60, 60, 61, 63, 64, 68, 68, 68, 73, 73, 81, 82, 85, 87, 88. Total days—3,330. Total pupils—74.

Variation in Rates of Progress in Language (Exercise Book No. 43).

Low 6 and High 6—9, 13, 14, 14, 14, 15, 16, 17, 17, 17, 18, 18, 19, 19, 20, 20, 21, 22, 23, 23, 23, 23, 23, 25, 25, 25, 25, 25, 25, 25, 25, 26, 27, 27, 28, 28, 29, 29, 31, 34, 35, 36, 36, 36, 37, 38, 38, 38, 39, 39, 40, 41, 42, 42, 42, 43, 43, 44, 44, 45, 45, 45, 45, 45, 46, 46, 46, 46, 46, 48, 48, 49, 50, 50, 50, 53, 53, 53, 54, 54, 54, 55, 55, 56, 56, 57, 57, 57, 58, 59, 61, 61, 61, 63, 63, 64, 64, 69, 70, 71, 93. Total days—3,951. Total pupils—101.

Variation in Rates of Progress in Language (Exercise Book No. 44).

Low 7 and High 7—33, 35, 36, 36, 36, 37, 37, 37, 37, 37, 38, 38, 39, 40, 40, 41, 42, 42, 43, 43, 43, 44, 44, 44, 45, 46, 47, 54, 54, 55, 55, 56, 56, 57, 59, 60, 63, 67, 72, 79. Total days—1,867. Total pupils—40.

FEATURES TO BE NOTED.

The Excessively Rapid and Excessively Slow Records. While the total variation, in most series, is extremely wide, it will be noted that the first few rates at the beginning, and the last few at the end, are exceptional. They do not conform to the usual evenness of variation. Most of these may be regarded as sporadic and due to accidental conditions not likely to be repeated. In fact, as will be later shown, few records of either great rapidity or great slowness are repeated by the same pupil. The amount of work assigned to a half-grade has already been determined by previous records and this has been fixed by what the slowest pupil, under normal and legitimate conditions, has accomplished in 95 days (one-half a school year), allowing one hour's work per day. In a few cases these records show that perfect adjustment of the amount of work assigned to a grade has not yet been reached, but changes in quantity of work have already been made and will show in later records. Consequently, the records exceeding 95 days may be regarded of little significance except that they show need of adjustment. The fastest legitimate records are usually in the vicinity of 19 or 20 hours (or days), making the range of variation between the extremes of 19 or 20 and 95 or 100—a ratio of 1 to 5.

Variation Is Evenly Distributed. The rates between the extremes of 19 to 95, when there are enough of them, are usually very evenly distributed. There is a slight unevenness approaching either extremity, but as a rule the evenness of this distribution is singular. Rates are nowhere bunched in groups in any way to offer justification for group teaching.

Subjects Follow the Same Law of Variation. The features of variation are practically the same in every subject when the number of pupils is approximately the same.

The General Significance. These figures forcibly display their own significance. They at once declare the futility of making the lockstep class system, by any modification or patching, serve the purposes for which schools are maintained. When we once realize that in every class of fifty pupils, proceeding in monotonous lockstep, there is one pupil who can do in one month what another pupil will require five months to finish, that the others are very evenly distributed between these extremes, and the reasonably slowest can make faster progress than the class in lockstep, we can no longer be content with schooling by the lockstep. It makes clear why there are so many repeaters, why there are so many disinterested, bored pupils.

There is only one line of argument possible—to dispute the facts. If any one questions them, it is easy to disprove or verify them. It would cost very little for any city to try out a group of 50 pupils upon the individual plan for six months. At most, under unfavorable conditions, it would cost only the salary of an additional teacher and a few dollars' worth of extra aids. Fix no set lessons, agree to promote pupils upon completion of the half-grade and take care of the situation. Then any one may learn the facts at first hand.

RECORDS OF SAME PUPILS THROUGH SUCCESSIVE GRADES.

We may now take up the data concerning the progress of the same pupil through successive grades in the same subject. The figures upon this phase of the subject are necessarily limited because our records extend backward only two years at best, and the majority are for shorter periods. Of some pupils we have the time record for only one half-grade; for others we have records for two, three, four, five, six and, in a few instances, for seven half-grades. We have grouped in each subject the records according to the number of half-grades completed. The standard time for records of one half-grade will, of course, be 95 hours; for two half-grades, 190 hours (95×2); for three half-grades, 285 hours (95×3); for four half-grades, 380 hours (95×4); for five half-grades, 475 hours (95×5); for six half-grades, 570 hours (95×6); for seven half-grades, 665 hours (95×7). Records which exceed these standards are excessive and represent retardation. Those which fall below these standards are accelerated rates.

For convenience of ready significance, we have given the average time each pupil has used in completing a half-grade—found by dividing the total hours by the number of half-grades. In the first table (Primary Reading), the records are in days, not hours, for reasons already explained. All other tables are in hours.

Explanation of Tables. The first series means that, taking all pupils in primary reading, of whom we have as yet only records for one half-grade, each has completed this half-grade in the days represented—43, 43, 58, and so on. Each could have used 95 days, the grade standard: those who have exceeded 95 days are retarded to the extent represented by the excess of days.

In the second series, we have the records of those who have completed two half-grades. The sum of each has been taken as shown in upper line: the maximum standard is 190 days, with which each may be compared. The average of each as shown in lower line is obtained by dividing the upper number by 2 and disregarding fractions. Thus, the fastest pupil completed two half-grades (one year) in 65 days or $3\frac{1}{4}$ months (20 days in school month); this is an average rate of 33 days per half-grade or a little less than $1\frac{1}{2}$ months. The slowest pupil finished in 265 days, exceeding the standard of 185 days by 80 days, a retardation of four months. There are 11 pupils who exceed the standard maximum assumed for the slowest.

The third series represents pupils of whom we have records for three half-grades ($1\frac{1}{2}$ years). The fastest completed these three half-grades in 81 days and the slowest in 312 days. The standard maximum is 285 days. The average of the fastest was 41 days per half-grade ($81 \div 2$), and the average rate of the slowest was 104 days. The fastest therefore finished with a saving of 220 days ($285 - 65$), and the slowest with a retardation of 27 days ($312 - 285$); or in terms of average, the fastest saved, on the average, 54 days ($95 - 41$), per half-grade, and the slowest lost 9 days per half-grade ($104 - 95$). The other series may be similarly interpreted.

Table showing the number of hours used by different pupils in completing one to six half-grades (upper line), and the average time of each (lower line). The standards are shown for each; excessively slow records are printed in black type.

PRIMARY READING.

Number of days used in completing one half-grade (standard maximum, 95 days)—43, 43, 58, 67, 67, 67, 68, 72, 76, 77, 81, 93, **98, 111, 111, 169, 178, 182.**

Number of days used in completing two half-grades (standard maximum, 180 days). Average number of days per half-grade (95 days):

65, 70, 71, 75, 95, 96, 96, 100, 101, 102, 103, 106, 112, 114, 115,
33, 35, 36, 38, 48, 48, 48, 50, 51, 51, 52, 53, 56, 57, 58,

115, 115, 120, 121, 122, 126, 127, 130, 131, 134, 137, 139, 140, 144, 145,
58, 58, 60, 61, 61, 63, 64, 65, 66, 67, 69, 70, 70, 72, 73,

145, 150, 153, 157, 160, 162, 162, 164, 166, 172, 182, 186, **196, 221, 232,**
73, 75, 77, 79, 80, 81, 81, 82, 83, 86, 91, 93, **98, 111, 116,**

233, 243, 249, 249, 250, 250, 262, 265.
117, 122, 125, 125, 125, 125, 131, 133.

Number of days used in completing three half-grades (standard maximum, 285 days). Average number of days per half-grade (95 days):

81, 87, 110, 113, 132, 138, 159, 164, 165, 165, 188, 189, 195, 200, 201,
27, 29, 37, 38, 44, 46, 53, 55, 55, 55, 63, 63, 65, 67, 67,

202, 204, 206, 208, 222, 223, 243, 259, 264, 274, 274, 276, **312.**
68, 68, 69, 70, 74, 75, 81, 87, 88, 92, 92, 92, **104.**

Number of days used in completing four half-grades (standard maximum, 380 days). Average (95 days):

107, 113, 154, 156, 162, 163, 167, 169, 178, 179, 214, 222,
27, 29, 39, 39, 41, 41, 42, 43, 45, 45, 54, 56,

224, 240, 243, 246, 254, 255, 263, 270, 278, 311, 331, 339,
56, 60, 61, 62, 64, 65, 66, 68, 70, 78, 83, 85.

Number of days used in completing five half-grades (standard maximum, 475 days). Average number of days per half-grade (maximum, 95 days):

122, 207, 254, 255, 267, 271, 272, 279, 301, 302, 316, 333, 355,
25, 42, 51, 51, 54, 55, 55, 56, 61, 61, 64, 67, 71.

Number of days used in completing six half-grades (standard maximum, 570 days). Average number of days per half-grade (maximum, 95 days):

239, 256, 260, 267, 270, 305, 307, 366.
40, 43, 44, 45, 45, 51, 52, 61.

Number of days used in completing seven half-grades (standard maximum, 665 days). Average number of days per half-grade (maximum, 95 days):

210, 309, 311.
30, 45, 45.

ARITHMETIC.

Number of hours used in completing one half-grade (standard maximum, 95 hours)—15, 20, 21, 23, 28, 29, 30, 31, 31, 33, 34, 36, 41, 42, 43, 43, 43, 44, 46, 46, 47, 50, 51, 53, 55, 56, 59, 59, 59, 62, 66, 67, 69, 70, 72, 74, 74, 79, 82, 84, 92, 92, **96, 96, 99, 100, 117, 122**. Total pupils—48.

Number of hours used in completing two half-grades (standard maximum, 190 hours). Average number of hours per half-grade (maximum, 95 hours):

48, 50, 50, 57, 61, 65, 67, 77, 80, 89, 90, 93.
24, 25, 25, 29, 31, 33, 34, 39, 40, 45, 45, 47.

99, 101, 104, 107, 109, 113, 114, 119, 120, 122, 123, 124.
50, 51, 52, 54, 55, 57, 57, 60, 60, 61, 62, 62.

129, 132, 133, 133, 133, 143, 144, 148, 148, 149, 153, 156.
65, 61, 67, 67, 67, 72, 72, 74, 74, 75, 77, 78.

157, 166, 167, 172, 179, 179, 182, 189, **193, 200.**
79, 83, 84, 86, 90, 90, 91, 95, **97, 100.**

Number of hours used in completing three half-grades (standard maximum, 285 hours). Average number of hours per half-grade (maximum, 95 hours):

81, 115, 116, 119, 126, 142, 144, 160, 163, 171, 173, 175.
27, 39, 39, 40, 42, 48, 48, 54, 55, 57, 58, 59.

178, 207, 207, 231, 266.
60, 69, 69, 77, 89.

Number of hours used in completing four half-grades (standard maximum, 280 hours). Average number of hours per half-grade (maximum, 95 hours):

145, 160, 168, 179, 180, 189, 202, 207, 209, 214, 217, 253, 268.
37, 40, 42, 45, 45, 48, 51, 52, 53, 54, 55, 64, 67.

ARITHMETIC (GRAMMAR GRADES).

Number of hours used in completing one half-grade (standard maximum, 95 hours)—19, 24, 27, 31, 31, 33, 35, 37, 38, 39, 39, 39, 41, 44, 44, 45, 46, 46, 49, 50, 51, 51, 51, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 62, 63, 63, 65, 66, 68, 70, 72, 73, 74, 75, 76, 80, 81, 81, 83, 85, 87, 87, **103, 108, 120, 128.**

Number of hours used in completing two half-grades (standard maximum, 190 hours). Average number of hours per half-grade (maximum, 95 hours):

63, 68, 75, 76, 83, 89, 90, 96, 99, 113, 113, 120, 122, 123, 124,
32, 34, 38, 38, 42, 45, 45, 48, 50, 57, 57, 60, 61, 62, 62,

127, 130, 131, 131, 134, 137, 138, 140, 142, 143, 143, 146, 148, 150, 152,
64, 65, 66, 66, 67, 69, 69, 70, 71, 72, 72, 73, 74, 75, 76,

153, 154, 155, 156, 157, 158, 159, 168, 168, 169, 170, 173, 174, 175, 175,
77, 77, 78, 78, 79, 79, 80, 84, 84, 85, 85, 87, 87, 88, 88,

178, 179, 182, 185, 188, **198 201, 213, 221, 233, 255.**
89, 90, 91, 93, 94, **94, 101, 107, 111, 117, 128.**

Number of hours used in completing three half-grades (standard maximum, 285 hours). Average number of hours per half-grade (maximum, 95 hours):

108, 108, 110, 122, 123, 130, 142, 143, 144, 148, 150, 159, 161, 164, 166,
36, 36, 37, 41, 41, 47, 48, 48, 48, 50, 50, 53, 54, 55, 56,

167, 169, 170, 173, 178, 180, 191, 198, 201, 202, 204, 206, 210, 211, 221,
57, 57, 57, 58, 60, 60, 64, 66, 67, 68, 68, 69, 70, 71, 74,

222, 225, 225, 227, 229, 230, 234, 236, 237, 238, 239, 239, 239, 241, 242,
74, 75, 75, 77, 77, 77, 78, 79, 79, 80, 80, 80, 80, 81, 81,

242, 243, 245, 246, 250, 251, 251, 253, 255, 255, 259, 259, 260, 262, 268,
81, 81, 82, 82, 84, 84, 84, 85, 85, 85, 87, 87, 87, 88, 90,

274, 274, **286, 288, 292, 308, 319.**
92, 92, **96, 96, 98, 103, 107.**

Number of hours used in completing four half-grades (standard maximum, 380 hours). Average number of hours per half-grade (maximum, 95 hours):

108, 131, 149, 167, 180, 191, 196, 200, 200, 202, 215, 215, 216, 222, 228,
27, 33, 38, 42, 45, 48, 49, 50, 50, 51, 54, 54, 54, 56, 57,

228, 234, 237, 237, 239, 239, 241, 242, 242, 243, 243, 248, 253, 255, 257,
57, 59, 60, 60, 60, 60, 61, 61, 61, 61, 61, 62, 64, 64, 65,

260, 260, 262, 264, 265, 266, 269, 272, 275, 276, 278, 278, 279, 282, 283,
65, 65, 66, 66, 67, 67, 68, 68, 69, 69, 70, 70, 70, 71, 71,

283, 286, 286, 287, 288, 293, 293, 293, 298, 303, 304, 309, 311, 313, 315,
71, 72, 72, 72, 72, 74, 74, 74, 75, 76, 76, 78, 78, 79, 79,

315, 319, 323, 326, 327, 328, 348, 363.
79, 80, 81, 82, 82, 82, 87, 91.

Number of hours used in completing five half-grades (standard maximum, 475 hours). Average number of hours per half-grade (maximum, 95 hours):

215, 216, 223, 232, 232, 246, 253, 262, 265, 269,
43, 44, 45, 47, 47, 50, 51, 53, 53, 54,

271, 281, 288, 294, 299, 305, 319, 324, 330.
55, 57, 58, 60, 60, 61, 64, 65, 66.

Number of hours used in completing six half-grades (standard maximum, 570 hours). Average number of hours per half-grade (maximum, 95 hours):

241, 289, 315, 323.
41, 50, 53, 54.

GRAMMAR.

The amount of time allowed for the study of grammar is one-half hour or 47½ hours per half-grade. The maximum standard is therefore 47½ hours instead of 95.

Number of hours used in completing one half-grade (standard maximum, 47½ hours)—7, 10, 11, 11, 11, 12, 12, 13, 13, 15, 16, 16, 16, 17, 18, 18, 19, 19, 20, 20, 21, 21, 22, 22, 22, 23, 23, 25, 27, 29, 33, 33, 33, 34, 34, 36, 37, 38, 39, 40, 43, 44, 44, **48, 49, 69.**

Number of hours used in completing two half-grades (standard maximum, 90 hours). Average number of hours per half-grade (maximum, 47½ hours):

10, 25, 26, 28, 30, 32, 33, 34, 41, 41, 43, 44, 47, 49, 50,
5, 13, 13, 14, 15, 16, 17, 17, 21, 21, 22, 22, 24, 25, 25,

50, 50, 50, 52, 52, 53, 53, 53, 53, 54, 55, 55, 56, 56, 57,
25, 25, 25, 26, 26, 27, 27, 27, 27, 27, 28, 28, 28, 28, 29,

58, 58, 58, 60, 60, 61, 61, 62, 62, 63, 63, 65, 65, 65, 71,
29, 29, 29, 30, 30, 31, 31, 31, 31, 32, 32, 33, 33, 33, 36,

74, 74, 81, 82, 84, **97, 100, 102, 105, 111.**
37, 37, 41, 41, 42, **49, 50, 51, 53, 56.**

Number of hours used in completing three half-grades (standard maximum, 142½ hours). Average number of hours per half-grade (maximum, 47½ hours):

29, 32, 35, 46, 46, 51, 52, 54, 54, 56, 60, 60, 60, 65, 67,
10, 11, 12, 16, 16, 17, 18, 18, 18, 19, 20, 20, 20, 22, 23,

70, 70, 71, 72, 73, 76, 77, 78, 80, 80, 81, 83, 84, 84, 85,
24, 24, 24, 24, 25, 26, 26, 26, 27, 27, 27, 28, 28, 28, 29,

87, 87, 88, 89, 90, 91, 91, 92, 92, 93, 93, 94, 98, 98, 99,
29, 29, 30, 30, 30, 31, 31, 31, 31, 31, 31, 32, 33, 33, 33,

100, 100, 101, 101, 103, 108, 108, 108, 109, 109, 111, 112, 115, 116, 117,
34, 34, 34, 34, 35, 36, 36, 36, 37, 37, 37, 38, 39, 39, 39,

121, 121, 130, 132, 134, 134, 135, **144.**
41, 41, 44, 44, 45, 45, 45, **48.**

Number of hours used in completing four half-grades (standard maximum, 190 hours. Average number of hours per half-grade (maximum, 47½ hours):

46, 68, 71, 73, 77, 77, 80, 83, 90, 91, 92, 97, 97, 101, 103, 105,
12, 17, 18, 19, 20, 20, 20, 21, 23, 23, 23, 25, 25, 26, 26, 27,

106, 106, 108, 110, 110, 111, 117, 118, 118, 119, 120, 121, 122, 123, 123, 123,
27, 27, 27, 28, 28, 28, 30, 30, 30, 30, 30, 31, 31, 31, 31, 31,

126, 127, 127, 131, 134, 135, 138, 138, 140, 143, 143, 144, 144, 147, 158.
32, 32, 32, 33, 34, 34, 35, 35, 35, 36, 36, 36, 36, 37, 40.

Number of hours used in completing five half-grades (standard maximum, 237½ hours). Average number of hours per half-grade (maximum, 47½ hours):

68, 82, 85, 93, 94, 97, 102, 102, 103, 105, 105, 106, 110, 111, 116,
14, 17, 17, 19, 19, 20, 21, 21, 21, 21, 21, 22, 22, 23, 24,

116, 116, 118, 118, 119, 121, 122, 128, 128, 132, 135, 140, 142, 144, 146,
24, 24, 24, 24, 24, 25, 25, 26, 26, 27, 27, 28, 29, 29, 30,

148, 161, 169.
30, 33, 34.

Number of hours used in completing six half-grades (standard maximum, 285 hours). Average number of hours per half-grade (maximum, 47½ hours):

76, 96, 107, 117, 119, 123, 134, 146.
13, 16, 18, 20, 20, 21, 23, 25.

Number of hours used in completing seven half-grades (standard maximum, 285 hours). Average number of hours per half-grade (maximum, 47½ hours):

291, 136, 291.
42, 20, 42.

HISTORY.

The daily allowance of time is one-half hour or 47½ hours per half-grade, as in grammar.

Number of hours used in completing one half-grade (standard maximum, 47½ hours)—15, 16, 19, 19, 24, 25, 26, 27, 27, 28, 29, 31, 32, 32, 33, 34, 38, 38, 41, 42, 44, 46, **48, 49, 55, 55, 60, 66, 92.** Total pupils—29.

Number of hours used in completing two half-grades (standard maximum, 95 hours). Average number of hours per half-grade (maximum, 47½ hours):

18, 24, 31, 33, 35, 35, 37, 38, 39, 39, 39, 41, 42, 43, 46,
9, 12, 16, 17, 18, 18, 19, 19, 20, 20, 20, 21, 21, 22, 23,

49, 49, 49, 52, 53, 55, 55, 60, 62, 63, 64, 65, 65, 66, 66,
25, 25, 25, 26, 27, 28, 28, 30, 31, 32, 32, 33, 33, 33, 33,

67, 68, 69, 70, 70, 71, 72, 73, 74, 74, 75, 78, 81, 81, 82,
34, 34, 35, 35, 35, 36, 36, 37, 37, 37, 38, 39, 41, 41, 41,

82, 86, 89, 91, 92, 94, **99, 100, 101, 102, 103, 105, 107, 115, 115,**
41, 43, 45, 46, 46, 47, **50, 50, 51, 51, 52, 53, 54, 58, 58,**

121, 123, 123, 124, 126, 128, 130, 136, 140, 146, 158.
61, 62, 62, 62, 63, 64, 65, 68, 70, 73, 79.

Number of hours used in completing three half-grades (standard maximum, 142½ hours). Average number of hours per half-grade (maximum, 47½ hours):

40, 66, 71, 71, 72, 72, 73, 78, 79, 80, 80, 82, 83, 84, 86,
14, 22, 24, 24, 24, 24, 25, 26, 27, 27, 27, 28, 28, 28, 29,

87, 89, 90, 90, 91, 92, 92, 93, 93, 95, 96, 97, 97, 98, 98,
29, 30, 30, 30, 31, 31, 31, 31, 31, 32, 32, 33, 33, 33, 33,

99, 100, 101, 101, 104, 107, 108, 108, 109, 114, 115, 115, 117, 119, 120,
33, 34, 34, 34, 35, 36, 36, 36, 37, 38, 39, 39, 39, 40, 40,

122, 122, 123, 123, 123, 125, 125, 127, 128, 128, 131, 131, 132, 132, 134,
41, 41, 41, 41, 41, 42, 42, 43, 43, 43, 44, 44, 44, 44, 45,

134, 136, 136, 136, 136, 137, 137, 138, 139, 139, 139, 140, 140, **143, 144,**
45, 46, 46, 46, 46, 46, 46, 46, 47, 47, 47, 47, 47, **48, 48,**

145, 147, 148, 150, 151, 156, 158, 159, 160, 162, 165, 167, 167, 169, 178.
49, 49, 50, 50, 51, 52, 53, 53, 54, 54, 55, 56, 56, 57, 60.

Number of hours used in completing four half-grades (standard maximum, 190 hours). Average number of hours per half-grade (maximum, 47½ hours):

92,	95,	99,	100,	100,	101,	102,	102,	105,	106,	107,	111,	112,	115,	116,
23,	24,	25,	25,	25,	26,	26,	26,	27,	27,	27,	28,	28,	29,	29,
116,	119,	119,	120,	120,	124,	126,	126,	132,	133,	134,	137,	138,	140,	141,
29,	30,	30,	30,	30,	31,	32,	32,	33,	34,	34,	35,	35,	35,	36,
144,	145,	148,	148,	152,	153,	159,	159,	160,	160,	161,	167,	168,	168,	172,
36,	37,	37,	37,	38,	39,	40,	40,	40,	40,	41,	42,	42,	42,	43,
175,	176,	180,	182,	183.										
44,	44,	45,	46,	46.										

Number of hours used in completing five half-grades (standard maximum, 237½ hours). Average number of hours per half-grade (maximum, 47½ hours):

93,	99,	107,	109,	112,	114,	117,	118,	118,	124,	125,	130,	132,
19,	20,	22,	22,	23,	23,	24,	24,	24,	25,	25,	26,	27,
134,	134,	136,	143,	145,	146,	151,	157,	161,	173,	184,	186,	205.
27,	27,	28,	29,	29,	30,	31,	32,	33,	35,	37,	38,	41.

Number of hours used in completing six half-grades (standard maximum, 285 hours). Average number of hours per half-grade (maximum, 47½ hours):

131,	163.
22,	28.

Number of hours used in completing seven half-grades (standard maximum, 332½ hours). Average number of hours per half-grade (maximum, 47½ hours):

108,	132.
16,	19.

FEATURES TO BE NOTED.

1. That with longer periods of time, the average rapid record grows slightly slower, and the average slow record grows very much faster.

This is unexpected and seems singular. With our general theory of types of "slow" and "fast" pupils, we should expect the fast to go faster and the slow at least to remain slow. But by examining the general record sheet, it appears that practically all pupils tend to vary widely in their own rates.

2. That while in the records for one half-grade, two half-grades and three half-grades, there are always some averages which exceed 95 hours, *there are no averages exceeding 95 hours among the pupils who have completed four, five or more half-grades.* This might be interpreted upon the ground that since our plan has only been in operation for two years, or less, the pupils who have completed four or more half-grades represent the "fast" type and that they have not made any slow records. To a certain extent, this explanation is probably valid, but as will be shown in a subsequent paragraph, the pupils who have completed four or more half-grades nevertheless are burdened with a considerable percentage of excessively slow records; the slow rates have been averaged out.

Are There Slow and Fast Types? It is clear that if the pupils who are exceptionally fast in the first half-grade should maintain these same rates continuously, they would complete the eight grades of this subject in short order. They would, therefore, constitute a "rapid" type. Similarly, if the pupils who are excessively slow should continue, through each successive grade, to move at the same retarded rate, they would slip further and further behind and require years to complete the eight grades. They would constitute a "slow" type. Seemingly we might also establish a "medium" type. These are terms of popular pedagogic presumption, and when we commenced the work of individual instruction, we confidently anticipated the records to run upon this plan. But the figures have not run upon this plan. We would have a difficult task to put a finger definitely upon any considerable number of pupils who, judged by their records, could be adjudged "rapid," "medium," or "slow." We have found few pupils who have made progress through successive grades at a *continuously* rapid, *continuously* medium, and fewer at a *continuously* slow rate. The rule is that of constant variation in rate, even by the same pupil. For illustration, we may take pupils in grammar grade arithmetic who have completed at least three successive half-grades. We have 154 such records, some for three half-grades, some for four half-grades, some for five and six. Let us designate as exceedingly rapid any rate which is less than half the standard minimum (95 hours) or $47\frac{1}{2}$ hours; as "medium," any rate which falls between $47\frac{1}{2}$ and 95 hours; and as excessively "slow" any record which exceeds 95 hours. Of these 155 pupils, there are 16 whose average rate is rapid, and 95 whose record contains one or more rapid rates for a half-grade, but only 3 are *continuously* rapid. There are 132 whose average is

medium, and 152 whose records contain one or more medium half-grade rates, but only 38 which are *continuously* medium. There are 45 whose records contain one or two slow half-grade rates, but only 6 average slow and *none* are *continuously* slow, even for three half-grades. There are 24 of the 155 whose records contain mixtures of all three types.

Of course, we know there are pupils inherently deficient—there are idiots, imbeciles, morons, and, in all probability, *backward* pupils among the normal. Also we do know there are prodigies. But the evidence of our experience simply minimizes the undue emphasis which has been placed upon the theory of slow and fast "types" for practical purposes. The factor of inherent qualities is evidently not so dominant and all-determining in the regular school subjects as we have assumed. Doubtless, in subjects of marked congenital origin these types do exist. These up-and-down variations, in the same pupil, can not be due as the rule, to inherent rapidity or slowness, but far more to some temporary and external conditions. Progress in arithmetic, more than any other school subject, is popularly supposed to be controlled by hereditary predisposition. What our records would indicate is that this factor has been greatly overestimated, that the differences among pupils, in native arithmetical ability, are much less than popular pedagogy has taught and that as a rule the variations are due to simpler external conditions.

What Becomes of Pupils Who, for a Half Grade, Exceed the Maximum Standard in a Given Subject? At least, in an individual system, there need be no perpetration of the preposterous absurdity of sending the pupil back over the grade to do completely over again not only the subject in which he is partially deficient, but also those in which he is not at all deficient. So far as the pupil has gone, under the individual plan, he is as thorough as the most rapid. He is simply behind. He may continue to lag behind, or, possibly, he may redouble his efforts and catch up. Yet, if, as popular pedagogy assumes, pupils who make slow progress for a half-grade belong to a "slow" type, by mental inheritance, they will continue to fall even further behind. But this condition, in our limited experience, does not appear to be the rule, nor even a noticeable tendency.

To make clear this situation, there are grouped below the successive rates of all pupils who have completed at least three half-grades of grammar grade arithmetic and who have made one or more records exceeding 95 hours for a half-grade. The total number of hours and the average rate are also given.

Explanation of Tables. Each horizontal line is the record of a single pupil. The first used 43 hours in his first half-grade, dropped to 110 hours (excessively slow) in his second half-grade, and returned to 51 hours in his third half-grade. His total was 204 hours or an average of 68 hours—27

hours less than the standard 95 hours, though he was excessively slow in one half-grade.

Number of hours for three half-grades			Total number of hours	Average rate per half-grade
One	Two	Three		
43	110	51	204	68
22	72	131	225	75
84	99	42	225	75
115	65	50	230	77
45	98	91	234	78
96	86	57	239	80
44	87	112	243	81
87	45	110	242	81
81	116	44	241	81
63	85	103	251	84
46	129	75	250	84
65	89	97	251	84
63	53	137	253	85
125	78	52	255	85
55	50	150	255	85
55	111	94	260	87
49	104	109	262	88
78	115	81	274	92
132	89	53	274	92
127	108	53	288	96
80	131	75	286	96
76	106	110	292	98
81	100	87	268	98
118	76	114	308	103
75	93	151	319	107

Number of hours for four half-grades				Total number of hours	Average rate per half-grade
One	Two	Three	Four		
23	49	132	33	237	60
31	100	54	54	239	60
114	41	42	67	267	66
33	95	96	42	266	67
60	30	74	105	269	68
102	76	69	35	282	71
108	67	35	69	279	70
58	77	113	45	293	74
53	144	66	30	293	74
45	103	64	81	293	74
122	91	34	62	309	78
128	62	76	49	315	79
81	96	78	72	327	82
93	151	58	26	328	82
82	83	121	62	348	87
79	146	38	100	363	91

Number of hours for five or six half-grades						Total number of hours	Average rate per half-grade
One	Two	Three	Four	Five	Six		
38	98	82	34	19		271	55
76	46	99	67	36		324	65
76	77	121	37	19		330	66
53	24	77	118	33	18	323	54

Features to Be Noted. 1. That no more than two excessively slow rates are contained in any one pupil's record. (This is thus far true of every pupil's record in every subject.)

2. That no excessive *average* is found in any series except those of two and three half-grades. In all records continuous for four or more half-grades, all rates in excess of 95 hours as an average are elided by the averaging process. (This is true without exception so far for every pupil in every subject.) *In other words, we have no pupil who, having completed at least four half-grades, is behind his grade in any subject.*

3. That the 154 pupils who have completed three or more half-grades do not constitute an exceptional type, since 45 of them (between one-fourth and one-third) have made at least one excessively slow record.

4. That of the 45 who make records containing at least one excessive rate, all except 6 slow records are averaged out and *no pupil* exceeds an average of 103 days.

5. That the records of these 154 pupils contain 47 slow rates, 75 medium rates and 32 fast rates. This condition offers no indication of an inherently "slow" type.

So, in conclusion, we may say that the rates of excessive slowness, shown in all the half-grade records are, as a rule, sporadic, due to transient and removable causes. There will be very few pupils, if any, who are proceeding at a rate which will carry them through the eight grades of the elementary school in excess of seven years and the bulk are proceeding at a rate to finish in six years and less. There are practically no *permanently* slow pupils (though a large percentage of them at one time or another exceed the maximum standard of 95 days per half-grade), because faster rates average out these excessive rates.

WHY AND HOW INDIVIDUAL INSTRUCTION CAN BE CHEAPER THAN CLASS INSTRUCTION.

Nine persons out of ten, when confronted by the proposal of individual instruction, immediately offer the off-hand conclusion that it is a good idea *theoretically*—in fact the only way, *ideally*—but, of course, it could never be put into practice *on account of the expense!* "How can you possibly apply individual instruction to classes of fifty pupils with one teacher?" is asked.

This question is offered as a clincher. It looks like a clincher and the final end of argument. Apparently more teachers would be required and more teachers would mean more dollars.

There is, however, a fatal weakness concealed in this question. Its axiomatic assumption that there must be fifty pupils in a class in order that the expense of schooling shall not be increased will bear scrutiny. Paradoxical as it may seem, we may very materially reduce the number of pupils per teacher, and yet *actually decrease the cost of schooling.* Our hasty conclusionists have entirely overlooked the fact that the largest item of school expense—and the one which makes fifty pupils to a teacher necessary under class instruction—is the expense of needless waste.

Some of these fifty pupils are repeaters; if we remove the cause of repeating grades, they will not be in the class—they will be further along and perhaps be graduated from the school. Another part—and almost half of them—also would not be in the class were it not for the fact that they are being held back, by the lockstep system; they also would be further along and perhaps graduated. In short, *the condition of fifty pupils to a teacher* is not a necessity, but *a disease created by the class system itself.* Any remedy which enables pupils to make progress faster, *reduces automatically the number of pupils assigned to each teacher.* Let us then first consider these wastes specifically.

I. The Waste of Retardation. It costs as much to carry a pupil through a grade for the second time as for the first time. The administrators of the school system seem never to have been acutely conscious, nor even conscious at all, of the enormous expense to the school system incurred by the requirement that pupils who fail to keep the lockstep stride shall repeat the grade. There is a peculiarly exasperating feature of this waste. It makes no difference whether the pupil has learned nothing during the entire grade or term or is merely behind to the extent that he might make up the deficiency in a few weeks' work. In either case he must repeat the entire year or term's work *at extra expense to the school treasury.* The situation is especially exasperating when the pupil is only partially deficient in *one* subject and must now be given an extra year or term's instruction in the five or six other subjects in which he is entirely proficient.

"Well," says the schoolmaster, helplessly, "what can we do about it?" There is nothing, under the class system, which can be done about it except to do what is being done—the pupil must pay the penalty in time, ambition and energy; and the school treasury must foot the cost in money. There are

many cities in the United States in which 40 to 50 per cent of the pupils are repeating grades. There are few cities in which the percentage of repeaters is less than 25. Many of these repeaters are repeating two, three, and even more years.

The Russell Sage Foundation has shown that in twenty-nine scattered cities of the United States, representing 206,495 pupils, repetition of grades requires 98,000 extra years of school instruction and its cost! At the average annual cost of $29.27 for schooling of each pupil, it will cost these twenty-nine cities at least the tidy sum of $2,868,400.*

The annual loss, due to repetition of grades, is a matter upon which there is yet little reliable data. In some cities, it would seem that the annual retardation amounts to as many as 20 out of every 100 pupils. In others, the percentage appears low, but a low percentage does not mean consequent *higher efficiency*. In some cities, the order has gone forth to promote pupils regardless of whether or not they have reached the standard. This device conceals inefficiency but does not *remove* it. In fact, we may assume that the cities which have the higher rate of retardation are likely to be the more conscientious and therefore in all probability also the more efficient.

Under an individual plan there need be no repeaters. The rate of progress of some pupils will be slower than that of others, but such absurdities as that of requiring a pupil, at public expense, to repeat five subjects because he is behind in one, or to do over in one subject not only what he has failed to learn but also that which he has learned, are eliminated. If the grade standards are set at what the slowest pupil can accomplish there can not be even laggards. As our figures have shown, the rate of the slowest pupil (not subnormal) under individual instruction, is faster than the rate of the class system.

II. The Waste of Unused Acceleration. The pupil who completes in 20 days an amount of work for which the grade standard permits him 95 days, advances himself 75 days. He also *saves to the school system the cost of instructing him for 75 days.* As we see, in the records of variation, all pupils with rates less than 95 days, advance themselves, and save to the school treasury the cost of instructing them the full 95 days each. When we add the hours of instruction each pupil thus saves to the school system, by acceleration, we have saved a huge percentage of the school time.

For illustration, let us take the records of teaching 76 pupils addition of integers (p. 39). By adding the time each used in completing this work, we find the sum to be 3,658 hours. But each could have used 95 hours and yet not have fallen behind the standard grading; for all the 76 pupils the total time permissible would have been 7,220 hours (95×76). The difference between the actual time is therefore 3,562 hours ($7,220 - 3,658$). In other words, the combined accelerated rates of the 76 pupils *have saved to the school treasury the cost of instruction of 49 per cent of the standard allowance.*

*Mr. Ayers of the Russell Sage Foundation has complicated his estimates by counting acceleration (by "skipping grades") as an asset. It is a questionable asset in any sense. But certainly skipping grades should not be figured as an offset to retardation. They are two separate items, in no causal relation to each other, and must be figured separately.

This saving by acceleration over the standard rate is an asset wholly unknown, and impossible, under the lockstep method (except in the form of the questionable feat of "skipping grades"). The class system entirely wastes this huge item of saving. All pupils are crowded down to a single rate—and this is a rate *which is slower than that of the slowest pupil, individually instructed.*

The following tables undertake to illustrate the amount of this saving. We will take first our variation records in reading.

Reading.

	Number of pupils	Actual number of days	Standard number of days	Saving of days	Saving in per cent
Low 1: Primer	45	3,327	4,275	948	22
High 1: First Reader	65	4,785	6,175	1,390	22
Low 2: Second Reader	60	4,434	5,700	1,266	22
High 2: First half Third Reader	53	2,954	5,035	2,081	41
Low 3: Last half Third Reader	65	3,350	6,175	2,825	45
High 3: First half Fourth Reader	66	3,396	6,270	2,874	45
Low 4: Last half Fourth Reader	59	3,380	5,605	2,225	39
High 4: Fifth Reader completed	43	2,478	4,085	1,607	39
Totals	456	28,104	43,320	15,216	35

Explanation of Table. Following the first horizontal line, the figures state that there are records of 45 pupils, completing the low first grade. By adding the actual number of days each used in completing this half-grade, we obtained a total of 3,327 days as the combined time used by the 45 pupils in completing this half-grade; but, each pupil could have used 95 days and yet not have fallen below the standard time; so we may multiply 95 days by 45 (number of pupils) and our result, 4,275 days, represents the time these 45 pupils might have legitimately used without retardation; the saving is obtained by subtracting the actual time used from the standard allowance; we obtain 948 days as the school time saved by the surplus of accelerated rates over the retarded rates, or a net saving of 22 per cent (948 ÷ 4,275).

The saving of the time allotted to giving instruction in reading has a money value to the school system. This saving is nearly one-fourth of the cost of giving reading instruction to a class of 45 pupils for one-half year—cost of teaching, school plant, maintenance and administration.

The totals show that 456 pupils actually used 28,104 days in completing various half-grades of reading progress. They could legitimately have used 95 days each, or (95×456) 43,320 days. The difference between the actual time used and the allotted time, 15,216 days, represents the saving, by acceleration, of these 456 pupils. The records indicate approximately the large saving in the expense, possible under an individual system, but wholly wasted under the class system. So far as our records go, it is shown that 35 per cent of the school time and energy allotted to instruction in reading is saved, and is available for other purposes. The next table shows the saving in integer arithmetic time.

Integer Arithmetic.

	Number of pupils	Actual hours used	Standard number of hours	Saving in hours	Saving in per cent
Addition of integers	76	3,658	7,220	3,562	49
Subtraction and multiplication of integers	54	3,786	5,130	1,344	26
Short division	68	3,715	6,460	2,745	42
Compound multiplication and long division	60	3,912	5,700	1,788	31
Totals	258	15,071	24,510	9,439	38

Advanced Arithmetic.

	Number of pupils	Actual hours used	Standard number of hours	Saving in hours	Saving in per cent
Low 5: Addition and subtraction of fractions and decimals	125	8,380	11,875	3,495	29
High 5: Multiplication and division of fractions and decimals, denominate numbers	130	9,126	12,350	3,224	26
Low 6: Problems and review in State Text to percentage	128	8,855	12,160	3,305	27
High 6: Cases I and II of percentage	135	10,116	12,825	2,709	21
Low 7: Case III, of percentage, interest, commission and banking, State Text	106	6,197	10,070	3,873	38
High 7: Taxes, duties, insurance, discount	84	4,416	7,980	3,564	44
Low 8: Plane figures, areas, square root and applications	52	2,996	4,940	1,944	39
Totals	760	50,086	72,200	22,114	30

History.

	Number of pupils	Actual number of hours	Standard number of hours	Saving in hours	Saving in per cent
Fifth: Elementary	78	4,657	7,410	2,753	37
Sixth: Advanced text (McMaster's Brief), first half	103	7,981	9,785	1,804	18
Seventh: Advanced text, completed	97	6,743	9,215	2,472	26
Totals	278	19,381	26,410	7,029	26

Geography.

	Number of pupils	Actual number of hours	Standard number of hours	Saving in hours	Saving in per cent
Fifth grade	55	3,259	5,225	1,966	37
Sixth grade	36	2,271	3,420	1,149	33
Seventh grade	25	1,263	2,375	1,112	46
Eighth grade	18	1,107	1,710	603	35
Totals	134	7,900	12,730	4,830	37

Grammar.

	Number of pupils	Actual number of hours	Standard number of hours	Saving in hours	Saving in per cent
Fifth grade	92	5,380	8,740	3,360	38
Sixth grade	93	4,936	8,835	3,899	44
Seventh grade	87	5,153	8,265	3,112	37
Totals	272	15,469	25,840	10,371	40

The Significance of These Tables. The confusion must not be made that this saving in accelerated rates represents the entire difference between individual and class instruction. The next section will show there is another considerable factor in this difference. The present figures show merely the saving in acceleration upon the basis of *our own grade standards*, represented by the rate of the legitimately slowest pupil (95 days). Although there is considerable variation in the amount of acceleration in the different subjects, due to inequalities in standardization, we may say with some assurance of approximation that this acceleration, is between 35 and 40 per cent inclusive of the few heavy losses by retardation. It means that we may expect to save by acceleration alone, some 35 to 40 per cent of the school time based upon an eight-year course for the slowest pupil. The saving in money expense is proportional.

III. Frictional Wastes of the Class System. There is another considerable waste by the class system, not clearly explicable as to cause, by which the rate of the class is slower than the rate of the standard set for the slowest pupil under the individual system. Probably the fairest comparison of standards between the usual class requirements and those we are using is in reading and arithmetic.

In reading (p. 38), it will be noted that our standard for promotion from the high fourth grade is ability to read understandingly the State Fifth Reader (Stepping Stones to Literature, Book V). But throughout the United States generally this book is completed at the end of the fifth grade, and, in San Francisco at least, is the standard for completing the low sixth grade. Our standard, therefore, means that our pupils are completing in four years what the class system is completing in five, and five and one-half years.

But, further, our standard of four years is the rate of *the slowest pupil and the present records indicate that none will take longer*; our fastest pupils are upon the road to complete this work in less than two years, and the others are distributed evenly between these extremes. In public schools using the class system, on the other hand, over 50 per cent *are falling by the wayside in the effort to finish this unit in five years—five or five and one-half is the rate of the survivors!*

Similarly in primary arithmetic the standard which our *slowest* pupils are meeting is that of completing integers, fractions and decimals at the end of the fourth year. The fastest pupils finish in much less time. Yet under the class system this amount of work is only reached by the survivors of the fifth grade, and in some schools a part of the fifth—*after 30 to 40 per cent have become laggards to the extent of one, two, three or more years!*

These are illustrations. It is evident that there are frictional factors operating in the class system which retard its speed, over and beyond the mere unused factor of acceleration. If we reduce these facts to figures, we shall find that the actual gain of acceleration by our pupils under an individual system over the rate of pupils in the public schools is, at least, considerably over 50 per cent. It means we are saving considerably over

50 per cent of teaching time, and therefore considerably over *50 per cent of the cost of instruction.*

It does not, however, mean that, necessarily, the saving in school instruction of considerably over 50 per cent will also reduce the time required by each pupil to complete the eight grades by four years. A certain portion of the waste is confined to administration and does not affect the rate of individual pupils' progress.

IV. The Wastes of Attempting to Teach All Pupils That Which Only a Few Can Learn or Have Occasion to Learn. The teaching of music, art and literature in the school classes is greatly handicapped by the effort to teach all the pupils what only a few, by the gifts of native endowment, can accomplish. Encouraged by the ambitions of teachers, the standards in these subjects have been set by the school system, as a rule, for the gifted. The non-gifted can not reach them because they have not the native abilities. The gifted, on the other hand, can not reach them because they are locked in step with the non-gifted. The result is a general bankruptcy of these subjects which makes them wastes of time with no benefit to any, and general injury to all.

We are at present handling the types of exceptions by this device: in the regular morning session we give the minimum course for all. In the afternoon pupils may return for additional work upon specialties or subjects in which they have marked talent. We first save a large amount of school instruction by cutting out a large part of the pupils who have manifested no abilities. From this saving we expend a part by giving thoroughly and in an advanced degree what it is profitable for each to acquire. This procedure is so new that it would be impossible to estimate the saving in time, or the increase in efficiency. A similar series of wastes occur in other subjects which may be illustrated by grammar grade arithmetic. About two years of our arithmetic might be termed vocational arithmetic. At least it assumes to prepare the youth of the land to do the arithmetic pertaining to some vocation—shingling, carpeting, paper hanging, surveying, brick laying, banking, commission, brokerage, bond buying, stock jobbing, buying and selling horses in mystifying terms of per cent and indulging in other transactions by processes unknown outside school texts. Of course, most of us know that these school processes are not the processes of the vocations themselves and that, even if they were, no end, save time-killing ends, is served by these school inflictions. But under the class system *none* can be excused because *all* must pursue the same course, and because, so our theory runs, a *few* might become bricklayers, or bank clerks, etc. Therefore, we require *all* to learn the alleged arithmetic of each trade in the fear that *some* might not be able to do the arithmetic of his own. Little girls "go through" (but do not learn) the school arithmetic of brick laying, shingle laying, etc., because they are *in the class*, and they can't be promoted unless they have covered the class course. The individual system at least will be an entering wedge to cleave this pedantic folly. When, *individually*, we require little girls to master the arithmetic of shingle laying, etc., the

absurdity will be more pertinent and more forcible. We will then tend to excuse each from at least large parts of this "vocational" arithmetic since we can do so as easily as not. Each pupil excused from the task means also that the school treasury will be excused from the cost of so much useless instruction. It is probable that in time most pupils would be sensibly excused from most of this two years' profitless arithmetic. Similarly, we may excuse from writing all pupils who once acquire the habit of legible writing; from spelling those who spell; from composition those who once acquire the forms of correct written language. In fact, the sum of these various small economies of school time attains very considerable proportions in bulk.

V. The Waste in Permanent Plant. If, as our records indicate, practically the slowest pupils will complete the elementary school of eight grades in seven years, the fastest in five years and the mass somewhere between these extremes, it follows that the number of pupils attending school at any given time will be very materially reduced—probably 40 to 50 per cent. Pupils who are now spending eight to twelve years in school will not attend more than five to seven years by reason of the elimination of wastes. The school plant can give the same service and yet be 40 to 50 per cent smaller, requiring fewer buildings and less equipment. The administration and maintenance, janitor service, repairs, and depreciation costs will be proportionately reduced.

VI. The Unmeasured Waste. There is one other waste of the class system to which I have not alluded, although while its money cost is the largest and most overwhelming, yet this money cost is the least of its evils. Statistics show that considerably more than fifty per cent of the pupils of the American public schools leave before they complete the elementary department. In other words, considerably over fifty per cent of our citizens, fathers and mothers, enter life without completing the rudiments of schooling! If school education has only a fraction of the value the American people have emotionally placed upon it, this single fact is one to justify a general national alarm. What must be the effect upon the ability of each to provide for himself, to receive the wages of right and healthful living, to avoid the pitfalls of ignorance, social evils and wrong citizenship? What is the effect of ignorant citizenship, unproductiveness, dependency, crime, and degeneracy upon the nation? What, indeed, is the money cost to the nation that over half its people and voters have not the capital of intelligence represented by a rudimentary schooling?

There is nothing so profitable, so economical, so asset-producing, as human intelligence; and on the other hand, there is nothing so profit-consuming, so wasteful, so bottom-scuttling to any enterprise—be it industrial, social, civic, or moral—as human ignorance. Intelligence or ignorance are the commodities for which the school system is, or may be, the responsible manufacturing plant. If it produces intelligence—intelligence to meet life's problems, adequate to the world's accumulated wisdom—then its value

is incalculable. But, on the other hand, our school system throws out fifty per cent of our people into lives of ignorance—and its cost is fearful at any price.

Nothing Which Is Inefficient Can Be Cheap. These enormous wastes which have been enumerated are inherent in the class system; they are the *necessary* consequences of it. The individual system removes the cause of them and therefore, their cost. The argument of cost is a boomerang against those who, with more haste than reflection, have raised this issue. The farmer who attempts to save money by using inefficient tools stands to lose his crop. In no form of modern business, public or private, do we admit that an inefficient or wasteful tool or process can be cheap—why in the school business? If the individual system can do the school business *without waste*, then its money cost must be less than the present class lockstep carrying a waste of considerably over fifty per cent. Let no one defend lockstep schooling upon the delusive plea that it is *cheap!*

The Size of the Class. With the data upon wastes by schooling pupils in groups, let us return to the question stated in the beginning of this chapter, "How can we possibly apply individual instruction to classes of fifty pupils with one teacher?" The fallacy that it is necessary to have fifty pupils to a teacher, contained in this form of the question, is the only obstacle in the minds of most people, for not uprooting the lockstep. If we divest the schools of the wastes occasioned by the lockstep, it will not be necessary to have anything like the ratio of fifty pupils to a teacher, and yet nevertheless reduce the expense of schooling. For illustration, let us suppose that in a city there are always 1,000 pupils in the schools under class instruction and that upon the average they require ten years to complete eight grades. This number of pupils at fifty pupils per teacher would require twenty teachers. Let us now suppose that the rate of progress is so hastened that upon the average only five years, or one-half the time to complete the school is required. As soon as this condition is established, there will be in school, at one time, not 1,000 pupils, but only 500. The 1,000 pupils will all receive their schooling as before and therefore there is no need to reduce the number of teachers. Consequently, each of the twenty teachers would have, not fifty pupils, but only twenty-five. The salary expense remains unchanged.

The above situation is an illustration. It is not probable that individual instruction will reduce the rate of progress quite to the extent of one-half, but we may rest with some assurance upon a reduction of 30 to 40 per cent. This would mean a reduction from classes of forty to fifty per teacher to twenty-five to thirty-five per teacher; if the ratio is forty to fifty, classes of thirty to forty would be reduced. The question now arises upon what ratio of pupils to teacher we can operate an individual system. This question can be answered with any exactness only by experience. What we are doing in a normal training school would be no index of what could be done by experienced permanent teachers. But, in the event it should prove necessary to employ some additional teachers, the cost could be abundantly

met by the savings of the wastes of the class system. The reduction in the size of classes would be accomplished by the elimination of retardation and the establishment of acceleration. The savings from the other wastes enumerated would create a fund which would far more than meet any special expense of individual instruction. Under "Application to City Schools" in the next chapter this matter will be more specifically discussed.

Summary of the Saving in Cost of Schooling by the Individual Plan.

1. That the extra instruction by repetition of grades necessary under the class system and amounting to 12 to 20 per cent of the cost of present schooling will be entirely eliminated by the individual system.

2. That by permitting pupils to make progress individually, there will be introduced the factor of acceleration. The combined acceleration will accomplish a saving of 25 to 40 per cent in the time and cost of elementary schooling.

3. That the more rapid progress of pupils through school will reduce the number of pupils in attendance at any one time and thereby reduce the size of the school plant necessary by 30 to 50 per cent. The saving of interest upon excess investment, maintenance and repairs, janitor service and administration will be appreciable.

4. That by giving each pupil just the training his abilities and possible needs justify, and cutting out the waste of the attempt to train *all* pupils to the same degree in every subject, regardless of need or ability, will yield a saving of at least 10 per cent or more.

5. That all these savings combined are considerably in excess of one-half the cost of present schooling by the class lockstep.

6. That by reason of the faster progress of pupils and the consequent smaller number of pupils in school, at any one time, the number of pupils per teacher will be decreased—probably 30 to 40 per cent. In city schools the class of 40 to 50 would be reduced to 25 to 35. If, after experience, it should be deemed desirable to employ some extra teachers, still further to reduce this ratio of pupils to teachers, the cost would be abundantly met by the savings enumerated and yet a tidy balance left in the treasury to the credit of the individual plan.

Advantages to Education by Individual Instruction.

1. All pupils, without any conspicuous handicaps of mind and body, or of regularity in attendance, would complete the elementary school of the present eight grades in five to seven years; if these pupils entered school at six years of age, they would graduate at ten to thirteen years.

2. The present appalling drop in school attendance, before the majority complete the elementary school, will be avoided because practically all will complete the school before the ages at which this drop now occurs.

3. Practically all children will complete the elementary school, thereby acquiring the rudiments of an education, and whatever this fact may mean to self-support, social advancement, personal comfort, greater intelligence

of citizenship, better government, lessening of dependency, disease, criminality, etc., will be reaped.

4. A new type of high school would by necessity be created, to receive pupils at ten to thirteen years of age; this would mean the teaching of languages, mathematics and sciences earlier and extending at the latter end, into vocational preparation and collegiate grades. If this school also were operated upon the individual system, double or nearly double the work of the present secondary school would be accomplished, giving a broader, firmer and more thorough preparation for college or life—a much needed reform.

5. Elementary night schools, except for the foreign born and those who are victims of special accidents in educational opportunity, will be unnecessary.

6. The percentage and degree of illiteracy in present citizenship will be greatly eliminated.

In re

EVERYCHILD, A MINOR,
vs.
LOCKSTEP SCHOOLING.

Figure out in any way we will the far-reaching significance of the facts. Do they not mean that, by official decree of school administration, for every five hours of school time, some pupils are marking time for one, two, three and even four hours? Do they not mean that if the cause of this time waste were removed, most pupils will have two, three, and four times as much time in which to learn other useful things in life preparation? Do they not mean that over one half of the school children, now graded out as school misfits, to become life misfits, could, if permitted to work at their own rate, get just as much out of their schooling as those who now mark time? Do they not mean that the present school plant could, under individual instruction, accomplish what it is now accomplishing, with at least half the expense, and use the other half for improving itself? If these things, as presented, be true—and they easily may be verified in any school—then argument is at end.

Be you parent or citizen, school administrator or teacher, the case of Everychild upon the threshold of life, floundering in the coils of red tape of traditional schooling for the opportunity to make *his* life worth the living of it, is up to you. And the cause of Everychild, let us not forget, is not a personal cause alone, but it is a cause which is the root of social prosperity, of safe citizenship for the State, and of human progress.

APPLICATION OF THE INDIVIDUAL PRINCIPLE TO VARIOUS TYPES OF SCHOOLS.

The principle of individual instruction has been shown. The practical applications of this principle to the various types of schools—the rural school, city schools, high schools, night schools, etc.—are matters of administration. The special application of individual instruction to a normal school training department, while probably the most complex and difficult of all, offers few suggestions for city schools. The conditions and purposes are in most cases altogether different and in some particulars directly reversed. However, with the exception of the large city class, existing administrative conditions are such that an easy beginning could be at once made with slight modification.

1. **Application to Rural Schools.** The form of the rural school of usual size, say twenty to thirty pupils, is sufficiently like the conditions of our training school to justify assurance that, at least with printed exercise books for pupils and manuals for teachers, the general methods of operation we are now using can be applied to the rural school with little or no modification. The larger rural classes, forty to fifty pupils, offer greater difficulties, but most teachers of these schools seem to agree that with the exercise books the individual plan lessens their labors, for these books provide means of independent work by pupils.

The principle of the reduction of the size of classes, by virtue of the faster progress of pupils, would doubtless finally assist the movement toward transportation of pupils to central schools. Already there is a large number of rural schools of only six to fifteen pupils and their farther reduction in size would mean approach to extinction.

2. **Application to Night Schools.** To the night schools the individual method offers particular advantages. It is to these schools that a percentage of the "misfits" turn after realization of their predicament. The night school is a poor educational idea, for its pupils are usually youths and men who already have put in a hard day's work and are in no condition physically or mentally to forego rest and sleep. But as a class, they are extremely eager, self-reliant and capable of independent, self-directed study. Moreover, as a matter of fact, the night school work is necessary individual because the students come to the school in all stages of progress and capabilities of advance. The lockstep class system, when rigorously applied in night schools, is little short of brutal. If any class of students in the world need and should have the opportunity to use their time profitably and effectively then it is this class. The Self-Instruction Series which has been prepared fits these needs because it enables each student to work without much or any assistance from teacher. The pupils have the eagerness and maturity, as a rule, to make efficient use of this opportunity. Further, by the use of these exercise books, students can work individually outside the school. In fact, the materials are here offered for a new type of night school—a school which should devote its energies chiefly to giving help to

individuals over hard places. Students need not attend every night but could work in their homes during spare hours of the day and at their convenience, and go to the school merely for occasional help from the teacher and to have work corrected. Such a plan would make the night school several times more efficient.

3. Application to High Schools. Anything to be said upon the application to high schools is, of course, conjectural. But there are certain considerations which justify assurance that the high school is peculiarly adapted to individual treatment and that the results in rapidity of progress, development of self-reliant habits, and thoroughness would be, if tried, even more startling than in the elementary school.

1. The pupils are older, more mature, and will even more keenly comprehend and appreciate the opportunities offered. Our experience shows that the motive for progress is the most powerful of all motives when once aroused.

2. The pupils being more familiar with reading, can better and more easily work from texts unassisted by teachers. Special pupils' exercise books probably would not be so necessary to assist comprehension, but some system of elastic lesson should be devised so that students who do not need as much exercise to impress a given principle as others may not be unnecessarily delayed.

3. The subjects of mathematics, the various sciences, especially in laboratory form, much of language teaching, wide literary readings, vocational training, especially lend themselves to individual instruction and the adaptation is manifest and easy.

4. The increased interest, greater rapidity of progress, absence of disciplinary friction and the sense of self-reliance, characteristic of individual instruction, would each be powerful incentives to hold pupils in the high schools and give them greater grasp upon life when they leave school. Let some one try it.

4. Application to the "Special Class." It has been the habit in some schools for many years to maintain what are called "special classes" for the benefit of "misfits." They are the only device, aside from repetition of grade, which the class system has used to remedy the evils of the lockstep. These classes, as a rule, are already operated under a crude form of individual teaching. Generally, only a limited number of pupils are permitted to a class. A superior teacher is assigned to each class, and the method has been that of individual instruction. Without other tools than the usual texts, the teachers of these classes have, as a rule, rendered good account of their charges, and frequently have brought backward pupils forward so rapidly that they regain their original grades. Our plan would further assist such classes. There is a suggestive lesson to be drawn from these special classes: This use of the individual principle has been used as a "cure" for lockstep evils. Why not as a preventive? If the principle upon which they operate succeeds in advancing pupils who have been graded out by the lockstep, why should the principle not be used as the regular

principle of all classes? Why should we wait for the damage to be done, and to be recognized as particularly atrocious before we invoke the principle? The idiocy of the man who locks the stable door after the horse has escaped, has its bearing upon this case. If the principle is good, all pupils should have the benefit of it. The existence of the "special" class is evidence of an existing disease—the lockstep. Why not use the fact as a warning lesson and proceed to the source of the disease in the class system itself? What our schools need is an abatement of an evil, not merely the cure of a very few of the occasional examples of it, which happen to become conspicuous.

Application to the Teaching of Subnormal Pupils. The problem of what to do in the school with subnormal pupils is one which already has been taken in hand by many cities. As a rule, they have been segregated into special classes and the effort made to teach them by instructors trained for this purpose. There has been no question but that the teaching must be individual. The class system with its lockstep of movement, its single standard of method, and its necessary principle that those whose mental construction does not meet fairly well these fixed conditions must be regarded as misfits to be eliminated, finds itself at unavoidable war with the mentally deficient. There can be no compromise, because both the school system and the individual mental qualities are fixed. Until a system of schooling is devised and constructed in detail to permit variations among pupils, we must expect in every group to have listless, idle, uninterested pupils, a burden upon the progress of others and a ceaseless drain upon the teachers' energies. Not all of these pupils are subnormal. Some are pupils to whom have not been offered the suitable method or stimulus. If a pupil is distinctly feeble-minded, we may not expect ever to teach him, but it is important not to mistake a pupil who merely has not been stimulated by the right method for one who is distinctly lacking. We certainly must not relax effort until we are certain. It is useless, for example, to attempt to teach a true monotone to sing, but we must be first sure the pupil is a true monotone, and not merely one in whom tone has not been developed.

The class system is helpless to deal with either type—either the pupil with the undeveloped quality or the pupil fundamentally lacking. It can do nothing except to eliminate such pupils from the class, where they can not be other than a nuisance and drag upon their fellows. But the policy of segregating backward pupils is open to severe objections. To segregate those who are supposed to be subnormal is to designate them as such. Whatever the administrative subterfuge employed, the pitiless fact, sooner or later, reaches the pupil and years afterward he may be called to face the stigma that he was taught in a class "for idiots." Parents very properly object to this segregation. The situation is aggravated by the fact that only a small percentage of the suspects placed in these classes are truly deficient —more often they are merely the accidental victims of the lockstep. The true subnormal has no place in the school system under any conditions. There is no value in attempting to teach him school work, for in any

adequate degree, this is impossible. He is born a dependent and must remain one under some form of family or state protection. The important problem is first to determine, in the borderland cases, the truth, definitely and finally. This must be done in the school, and, desirably, without segregation.

In very recent years, a flood of light has been let in upon the physical causes and conditions of the mentally deficient. By such exhaustive and practical studies as have been made by Doctor Henry H. Goddard of Vineland, we are brought face to face with the realization that the range of mental powers is limited in a fixed way by heredity. In many respects these facts are unpleasant and contrary to what we would like to have true, because the possibilities in many human lives seem predetermined and foreordained. No idiot, imbecile or moron has ever yet, by any process of education or training, been lifted from one of these classifications into a higher order. Their whole lives must be compassed by their hereditary limitations. They may be trained and developed, *within* the limits of the classification, but can not cross the boundary.

These are depressing facts to face. We may wish and hope that there may yet be found some avenue of escape, for those so limited, but the structures of education must be built upon a basis of truth, however unwished for, and not upon hopes, however desirable.

A prominent administrator of a state school system recently argued "you will still have, under the individual system, the subnormal pupil to deal with, just as we have him now in the class system. These subnormals are one chief cause of the clogging of the school system with repeaters—especially in the lower grades. They will also be with you in the individual system and will overburden the average rate in the same way." The subnormals overburden the class system because the class system is hopelessly attempting *to force them to do what is impossible for them to do and because, by the rigidity of its lockstep, they can not be given work which they can pursue with the greatest profit to themselves.*

The individual system makes a condition which relieves all these difficulties. If the deficient remain in the same classroom they affect no other pupil's progress. Provided the teachers are properly trained to use different types of methods adapted to them, there is no need for segregation. Or, teachers of special training may come into the rooms to give instruction. The condition is entirely possible that different courses of study, suitable to each individual, could be provided and when this provision is made, the deficient pupil ceases to be a school problem at least.

5. Application to Large Classes in City Schools. It has already been shown in previous chapters that the cost of schooling by individual instruction in city schools would be cheaper by reason of the elimination of wastes. It also has been shown that without increasing the number of teachers, the number of pupils per teacher, by reason of faster progress, would be very materially reduced—in all probability that with the same total of pupils to

be schooled, the ratio of forty to fifty pupils per teacher would be automatically reduced to twenty-five to thirty-five, and that any increase of teachers or other possible costs would be amply met by the saving of waste.

The problem of introducing the individual principle is therefore simplified to one of administrative remodeling with the assurance that there will be no increase in cost, and a probability of a substantial decrease. What the most suitable framework shall be can only be determined by experience, trial and successive adaptations. That it will be anything like the present classes would seem the furthest removed from desirability and likelihood. It is true that the automatic reduction of the present large classes to those not exceeding twenty-five to thirty-five would suggest the possibility that one teacher could handle such classes by individual instruction without difficulty. But there are other considerations which point to the greater advantages of a complete remodeling. For example, the modern tendency toward the employment of special teachers is working out merely to superimpose a corps of special teachers upon classes already provided, to the limit of cost, with regular teachers. There is consequent lack of economy because either special or regular teacher must be idle while the other has the class. We need a system by which adjustment of instruction can be made economically. There is nothing so sacred about our class organization that we need to have any aversion to casting it into the junk pile if a better plan is visible.

As the administrative system under an individual plan is taking shape in my own mind, I see, not a small classroom of forty to fifty pupils with a single teacher, but a large room containing 200 to 500 pupils. Around it are small offices; and also shops, laboratories, libraries, workshops and other rooms for various special purposes. In these offices will be the teachers and a new type of school officer—an expert examiner. Each teacher will be a skilled expert in some one field who will take a pupil into his office for individual instruction whenever necessary. Pupils will work individually by themselves, in workshops, laboratories, study halls, etc., will be much more self-reliant than under the class system, and will require the teacher only for help in critical difficulties. The examiners will be experts in testing the progress of pupils and will determine their promotion, necessity for study upon special difficulties, etc. The smaller classrooms will be used, not for recitations, but for training in oral discussions, for laboratory study, music, etc.

It would be the purpose of this administrative system to meet each individual pupil's needs, to provide, in much greater variety, means of education through *studying things* rather than books, through *activities* rather than through *memorizing*, through personal initiative rather than through teacher-imposed tasks. Above all, such an administration would be constantly upon the alert to prune out wastes, to see to it that each pupil is doing what is clearly profitable to himself in an individual sense.

When we first come at the problem of applying the individual principle, we naturally assume that the preservation of certain old furniture of the class system is a vital consideration. Let us realize at once that it is not

part of the problem of adapting the school system to the use of the individual, to preserve the wasteful and cumbersome administrative junk which has been the special paraphernalia of the class system. It is true we will have upon our hands this litter of the old tools and structures of the class systems—dogmatic notions of mind, texts, classrooms of a certain size, duties of teachers, size of classes, types of instructors and instruction, disciplinary rules and regulations. Do we now expect to operate an entirely different principle and yet retain these cumbersome implements created and shaped specially for the class lockstep? It is natural that the first series of questions should be combined with groping attempts to preserve the old machinery along with the new principle. We are constantly asked such questions as these: How can you promote a pupil *to another room?* How can one teacher *hear fifty pupils recite?* How do you keep pupils from being in the eighth grade in reading and *in the sixth in arithmetic?* If your pupils graduate from the grammar school at eleven years of age, where are they going to go to school—they're too young for the high school? How are you going to transfer pupils from an individual school *to a class school?* If pupils are studying different subjects at one time, how could you send a *class* out to manual training or cooking? The situation is not unlike that of the old farmer who for forty years had accomplished transportation by means of a buckboard and a mule. Automobile transit tempted him and he conceived the notion of buying merely a gasoline engine and of tying it to the buckboard. The thing did not work and he kicked it to pieces, declaring the trouble was with the engine. "Besides," he said, "there ain't no place to hitch the mule." It does not at first readily occur that all these questions assume the retention of the class machinery which bears as much necessity to an individual system as the old buckboard bears to an automobile. It is hard to realize that it is the buckboard and mule which must be changed—not the new engine.

The first thing in planning reconstruction is to get firm hold of the fact that *considerably more than half the money now expended in maintaining the class system is expended in maintaining wastes* which individual instruction eliminates—waste of repeating grades, waste by making no use of acceleration, waste of maintenance of a plant almost double the necessary size, waste of unnecessary friction, wastes of attempting to educate all pupils in lines for which they have either no ability nor use, because *some* may possibly have the ability or use, etc. Most of the class machinery has been used to perpetuate these wastes. Let's away with it.

Objections to Individual Instruction in Class Divisions. The simple notion of transforming the class system into an individual plan, merely by having the class teacher do individual work, seems to us an impracticable project. It is true there are practically no recitations and the time usually devoted to them may be saved; but this condition greatly increases the amount of written work even if pupils make no faster progress. Pupils will, on the average, make nearly double the progress, which again greatly increases the amount of work to be corrected. The plan of having

"readers" of written work to assist the teacher has been suggested and this device would perhaps do as a temporary expedient until the classes are reduced in size by virtue of more rapid progress. However, since there is no visible reason why the plan of classes of fifty pupils should be retained, it would be better in our judgment to plan at once for a radical remodeling of the entire administrative plan. It might be stated in this connection that, during the past year, one large parish school in San Francisco, St. Peter's Parish, has adopted the individual plan and is now carrying it out very successfully though the smallest class is over fifty pupils and only one teacher is assigned to a class. The teachers are enthusiastic, yet I can not but feel that these results are accomplished by a labor and devotion which we ought neither to expect nor permit. In summation, we may say that the establishment of an individual system in city school systems will probably best be reached by radical remodeling of the administrative system. The exact form will have to be worked out in a city school system by experience. The suggestions made are merely by way of illustration of possibilities. The problem can not be difficult for, in any project of this kind, the financial element is a determining factor, and we have shown that the wastes of expense by the class system, which the individual system would eliminate, would provide ample means even for the most radical remodeling. It is true that for the four or five years during which the changes were being accomplished, while the supply of repeaters was being worked out and the gains of accelerated rates were being established, the cost would be temporarily increased. In four years at most, however, the change could be entirely accomplished and thereafter the saving of pupils' time and the school expense would be operative.

SUPPLEMENTARY FEATURES.

There are certain consequences of individual instruction of such importance as to deserve mention. They are stated as follows:

Self-Reliance. There is no more vital factor of success than the quality of reliance upon self. Without it, education, wealth, native abilities and other advantages, important as they are, are well-nigh worthless. Success is to him who creates opportunity by his own energy, and failure is born of the expectation that opportunity is fed to us by a spoon. The man of self-reliance is he who says that if this thing is to be done, then he is the one who shall do it. Failure is by him who complains that others failed him. Self-reliance is an attitude toward life, born of habits. The pioneer, and the boy and the girl reared upon the farm a generation ago, usually had the advantages of this training. Self-reliance has rarely been a product of the school, and when we ask ourselves why this is so, we see that it is practically impossible for self-reliant attitudes and habits to be developed by the dependency necessary under the class system. Schooling by class is training chiefly in dependency upon others. The individual learns to move only when the class moves, and in the set manner in which it moves. The individual therefore waits passively until the class is told what to do, and

how to do it in unison. Conformity and obedience to dictated, uniform procedure are necessarily the chief goals of the school, and individual divergence of any kind must be sharply suppressed. To think for one's self, to do for one's self, to use self-initiated energy in the school class, necessarily are "verboten." The pupil is daily trained passively to be led, to be urged, to move by order, and only when ordered. The motor of his action is *outside* himself. Necessarily the class method of instruction must, day in and day out, teach that false and most debilitating lesson, that the thing to do in life is to do what is measured out for one to do—never more under any circumstances, and as much less as possible under all circumstances. We have, through our schools, carried the spoon-feeding process of infancy forward into the hunting period of youth. Yet the time comes when youth must go into the forest alone, shape his own tools and weapons and make his own kill. The wolf pack which reared Mowgli knew more of true schoolmastership than we.

Can we measure the silent force of twelve or more years of school training of this kind upon the later man? Can we wonder that the spines of our school-bred products too often are gristle instead of bone, and that their heads are filled with undigested sap? Is there any reason to doubt that this attempted suppression of self-reliance and initiative are chiefly responsible for the instinctive spirit of rebellion against the school, so common among the more virile types of young boyhood? And which is truly right—the intuitions of the boy, or the perverted system of our schooling?

That the self-made man has a something which often overbalances the vastly superior advantages of the school-bred product, is an anomaly which long has puzzled the schoolmaster. The quality is self-reliance.

The individual method elides the lockstep. It therefore opens the door for training in self-reliance. It teaches the truth that for "every day, and every hour, we receive a just reward for all we are." Each step forward must be the child's own step, secured by his own exertion, dictated by his own ambition, and accomplished by his own individual thinking. There can be no explanation to self, or to others, that his shortcomings are due to others or that success is an accident of chance.

It is as valuable that the pupil should acquire the attitude of self-direction during his school life, rather than the attitude of a galley slave obeying orders under exaction by outside force, as that he should learn the school knowledge. It is the difference between slavery and freedom.

Thoroughness. Under the class system, the class, as a whole, moves forward, but the comprehension of the lessons by the pupils varies greatly in degree. The teacher is continually addressing a more or less abstract composite—"the class"—but what any particular individual thoroughly grasps, is a very indefinite matter. A few pupils recite upon different parts of the lesson, but no one pupil, much less, all the pupils, recite upon all the lesson. What each obtains from the lesson is necessarily very doubtful. The realization is present in the minds of the best that whatever they do not comprehend, nevertheless the class as a whole moves on.

It is altogether the reverse with the individual plan. Each pupil must work through the whole of every lesson, must personally pursue every item, and must work out for himself every "thought" question in an intelligent manner. He can, in no way, be carried, *by class momentum*, over ground which he has not thought out for himself, and which he does not understand. No pupil—and each realizes this fact—can pass over a lesson by the momentum of others' thinking. The progress of each must be made by the thinking of each.

We may say, with some assurance, that all pupils, from the slowest to the fastest, who complete the same unit of a formal study such as arithmetic, have approximately the same degree of thoroughness. The system of tests and reviews makes it practically impossible to progress unless each exercise, advance and review, is thoroughly mastered as it is passed over. Consequently, completion of an exercise book is evidence of thoroughness.

Under the class plan all members of the class complete the work of a grade *in the same time, but they vary widely in thoroughness.* Under the individual system the thoroughness is practically the same for all, but the pupils *vary widely in the time they require to finish the work.* This is the important and vital distinction between the two systems.

No Repetition of Grades. There is a most important consequence of the condition brought out in the last paragraph, that all pupils passing over a given unit accomplish practically the same thoroughness, but vary in time. This means that the individual system does away with repetition of grades. What a pupil finishes is thoroughly done, and there is no need or occasion to require him to repeat it. His memory may fail in particular facts, but the system of reviews which follows, picks up these matters and holds him until he relearns the specific thing he has lost.

Pupils under the individual plan may go slower than the class rate stipulates, but the fact that they are never obliged to repeat entire units of work, but constantly are making forward progress, makes their rate faster in the long run. It is upon the principle of the race between the hare and the tortoise. Our records seem to indicate that, with very few exceptions, the slowest pupils cover the ground of a grade in less time than the established class rate assumes to cover it. Further, they are approximately as thorough as the fastest.

Training in Selecting the Essential and Pertinent. The usual direction of the class teacher in assigning lessons in history or geography, for example, is to tell the class to study the "essential facts" from page 47 to page 51. But what are the "essential facts" *from the viewpoint of the pupil?* To the pupil, unfamiliar with the subject, all facts look alike. The allusions, accidental facts, and unessential facts are as likely to be selected as the "essential." Very conscientious little girls, in this dilemma, memorize every word, in the hope thereby, that they have not missed any. Our exercise books meet this difficulty by offering questions, more or less definite, to draw out the essentials. These questions can be, and are, varied, as the pupil progresses, to call for more and more judgment as to what is

pertinent. The pupil's study is thereby made intelligent, and the pupil is gradually trained in ability to distinguish for himself the essential and pertinent. Such a device is valuable, either under the class or individual system.

Both Slow and Rapid Pupils Are Benefited by Individual Instruction. The advantage to rapid pupils is manifest. They do in one, two or three months the amount of work set as the required standard for five months and proceed to the work of the next unit. The advantage to pupils of slower grasp is not so manifest, but it is probably of greater value. Under the class system, the pupils who can not keep up the class pace—those who by reason of sickness or absence or other causes fall behind the class in lockstep, and those who are behind in one or two subjects but up in the others—fail of promotion and must repeat the grade. There is no possible alternative. Therefore, a year or half year must be lost. But under the individual system, there is no repetition of grades. The pupil may make daily progress slowly but he can not pass over any day's work until he has mastered it; if he forgets, the reviews will require him to relearn it at once. When he finishes a grade, his thoroughness is approximately equal to that of all others. He never repeats grades. Moreover, even if he is the slowest pupil, he should complete the eight grades, barring absences, in eight years, for it is his rate which is taken as the standard requirement of a grade. Pupils who are sick or absent for other causes have full opportunity upon return to recover lost ground by extra exertion, whereas under the class system to get behind the class makes repetition of a grade imminent.

The Individual System Lays a Basis for Exact Grading. There is nothing so indefinite as the notions which, under the class plan, we possess regarding the amount of work we should specify the work of a grade. Judged by the retardations gathered in recent years over the entire United States, there is a strong suspicion that our first grades are probably overloaded to nearly double their capacity, but no individual teacher knows the truth. Some pupils seem to finish it—the mass do not. The individual system gives us exactly the time each pupil has spent in completing a given unit of work with thoroughness. We have the time records of all. For example, the time records of the seventy-seven pupils who finished addition show that, with the exception of four pupils, all finished in less than eighty hours' work. We do know that one of these was unwell and that we failed to arouse normal interest or ambition with the other three. It is quite clear, therefore, we should allow eighty hours for formal addition in order that the normally slowest pupils shall not drag; the others will do the work in less time.

Or, to take another example: the figures show that to finish with thorough comprehension what we had originally laid out as the low fifth grade work in grammar, eight out of sixty-six pupils required nearly double the time allotted to them, and very generally all records were nearly double the time required in other half-grades of the same subject. We had been

making the requirement of the same amount of ground for low fifth grades under the class system for some years, and had not before suspected the fact that it was too much. But now the condition stands out in plain black and white under the individual plan. There were at least two alternatives—either we must cut the allotment of work seventy-five per cent, or, find some easier and more rapid method of covering this ground. The exercise books of a very large majority of pupils showed difficulty with certain lessons and we were stimulated to discover devices which would ease these difficulties. The result is a revised exercise book remedying these difficulties.

This consideration can not receive too much emphasis. By this means the allotments of school work to each grade can be definitely regulated in some exact degree of relationship to what we may reasonably anticipate pupils can accomplish. Under the class system an undue amount is often required with the result that many pupils pay the penalty of our inaccuracy by retardation.

We therefore have the exact time which is required for a number of different pupils to finish a given unit of work. Striking out the few records which for particular reasons are too slow, we can set the record of the justly slowest rate as the requirement for the half-grade. This will be the established standard for all later pupils unless subsequent records show it is too low or too high. The grade requirement can then be changed.

Types of Teachers and the Individual System. As far as we can now determine the individual plan will do two things of immense value to the schools.

1. By developing self-reliance, a large majority of pupils make progress despite weaknesses in teacher; *i. e.,* poor judgment, improper and inadequate skill in instruction or lack of proper training. The small minority of pupils who do not respond, who remain dependent, and who require constant stimulation will be no worse off than under the class system, and at least, the teacher will have the time to give them special attention for the majority need little.

On the other hand the individual plan, in the hands of a magnetic, inspiring teacher can work greater wonders. She can lift the usual progress of the ambitious pupils to the level of wonder-working enthusiasm. She can also lift the dependent minority and redeem many of them. In brief, under the individual plan, the weak or inefficient teacher can do much less damage to pupils than under the class system which makes all depend upon the teacher; and on the other hand, the limits of what a competent, inspirational teacher may accomplish are extended far beyond the possibility of any class teacher.

Reducing the School Day. The gratifying but singular fact has developed that while pupils are making the faster progress, they nevertheless are requiring less time per day. With the new term (1915), *we are reducing the regular school day to three and one-half hours, with no required home study.* Our session opens at 8:45 and closes at 12:45 with one thirty-minute recess for all grades, and an extra ten-minute recess

for primary pupils. No home work is prescribed in any regular subject, but pupils are encouraged to read widely along the lines of literature, history, travel, science, etc. Only for exceptional reasons and upon petition of both parents and pupil is any home study of a regular subject permitted. The shortening of the time of school work is due to the intensified character of study under the individual method.

Exceptions, however, are made to this single morning session plan. There is an afternoon session from 1:45 to 3 o'clock which two types of pupils are permitted to attend: (1) pupils whose parents personally wish additional school time in regular subjects, for various reasons, and (2) pupils with distinctly supernormal gifts in the subjects of music, art or dramatic ability, or a special interest in science. Some parents wish to avoid the dangers of having children upon the streets in the afternoon; other pupils are over-age and are desirous of making up lost time. In any case, the afternoon session is a privilege, and attendance is granted only upon application of the pupil through the parent. In the case of the supernormal abilities, the suggestion of extra training is made by the faculty and if pupil and parents desire it, as almost without exception they do, the permission is granted. Out of a total school attendance of 650 pupils, there are now about 150 pupils attending, for one or more days per week, the afternoon session in music, in drawing, in dramatic art, in science, in arithmetic, in composition, in history, in geography.

The Futility of "Group Remedies" for the Lockstep. The chief efforts which have been made to mitigate the evils of the class lockstep have been upon the theory of dividing the class into smaller groups. There is some mitigation in this device, due to lessening losses by administrative frictions, but the essential evil of the lockstep—the linking of unequals into a forced equality of stride—is not mitigated at all. We can have just as much lockstep by chaining two unequals together as by chaining ten or fifty. The trouble does not arise from the *number* chained together, but from the futility of chaining together *any unequals*. Our data abundantly proves this fact by two chief features.

1. **Progress by Fits and Starts.** Two pupils rarely make the same progress even for a week. What is a sticking point or difficulty for one pupil is not for the other. Little Billy is ambitious and keyed with enthusiasm upon Monday, while Tommy's day is Tuesday. Mary can spell "cat" but wants to put a "w" in dog, while Susie prefers a "k" in cat but is satisfied with any "dog" as it is. While any pair may disagree today upon one of these facts, tomorrow they disagree upon an entirely different fact. Their ambitions, their stomachs and motives may also vibrate dissonantly. So, reduction of the number in the group does not bring unity and harmony. The profits of individual instruction can only be gathered by completely individual teaching. Children in school, as in play, move by fits and starts and bear a treacherous suggestion of kinship to Kipling's banderlog.

2. **The Group System Rests Upon the "Type Theory."** The usual group remedies are based upon the theory of "rapid" and "slow" types. This theory has not been supported by any evidence. As our figures have shown, rapidity and slowness, to an almost exclusive degree are intermittent conditions having little to do with a fixed native rate. Many years ago, while superintendent of schools in a small city, the writer became seized with the notion of one of these group remedies upon a basis of fixed types of "rapid," "medium" and "slow" children. Each class was divided into the three types and each type was allowed to make a separate promotion rate. The thing looked well upon paper, but it did not work off paper. The groupings quickly developed a fluid weakness for dissipating themselves into the air in a most unaccountable way. The fast pupils went slow, the slow pupils went fast, the mediums went both ways, and no one would stay put. I did not understand, then, as the present data make clear, that the number of pupils falling into these fixed classifications is exceedingly few and not sufficient to make practicable these mitigating group schemes.

THE INDIVIDUAL SYSTEM A MEANS OF TRAINING TEACHERS.

We are frequently asked the question why, as a normal school, we are using the method of individual instruction to train our students in view of the fact that, as schools are now organized, they must become "class" teachers. The San Francisco Normal School uses the individual system as a means of training its students for only about half their course. Most of our students are trained for the remainder of their course in the class system, through assignment as assistant teachers and student substitutes in the public schools of the surrounding cities. As a partial means of training young teachers, the individual system offers to the problem, especially during the "breaking-in" period, some very marked and almost indispensable advantages:

1. **Developing the Teaching Heart.** Individual instruction of pupils is the most effective means of training teachers in the chief difficulties of teacher training, whether they are to teach "classes," or pupils. The first and fundamental problem in teacher-training is to quicken in the young teacher, the "teaching heart," to put her emotionally *en rapport* with the pupil, to divest the beginner of the ingrained notion that teaching is merely the problem of "bossing the class." The atmosphere of a "class" exaggerates and increases this difficulty. The individual plan brings the teacher in human and personal contact with the child, and stirs the undeveloped impulses of the teaching instinct through the heart.

2. **Training in Specific Difficulties of Subject.** The second purpose lies in the fact that disciplinary control of a class must first have a firm foundation in a trained knowledge and personal skill in overcoming certain specific difficulties which every subject contains. There are, for example, probably a dozen such "sticking" points in teaching arithmetic, and as many more in primary reading. Each subject has its quota. Young teachers can never learn them by being told or by memorizing them with glazed interest in the "methods" classes. "Class" teaching does not make them stand out clearly and a young teacher with "class" discipline upon her hands can not get down to them and she is glad to escape the whole issue by "hearing the class recite."

The class teacher is only rarely brought face to face with the individual difficulties each pupil has in learning. She assigns the class lesson and may proceed, by class exercise, to elucidate the problem in a way, according to the doctrines of general pedagogy, the human mind *ought* to learn. Her chief work, however, is to appraise the result as shown by class recitation. *She is ever trying to make minds fit the lesson.* The teacher under the individual system is ever being trained by experience *in shaping the lessons to fit the minds of the various pupils.* Such experience is invaluable. It is the only thorough and efficient means of teacher-training.

3. **Preparation for Rural Schools.** The third chief reason for using the individual system for one-half the training of our normal students is that it offers special preparation for teaching in rural schools. The large

majority of rural schools have an enrollment of less than twenty-five or thirty pupils with only a few pupils in each grade. Their attendance in many cases is irregular. Many of them are ambitious to make up lost time or to make rapid progress. To all of these conditions the individual system which we are developing is directly fitting, and can be used by teachers without serious modification of the existing administrative system. Moreover, up to a generation ago, rural schools generally, were taught by individual instruction and no attempt was made to maintain grade restrictions. It is only in very recent years that the rural school adopted the lock-step grading and promotion of its pupils in foolish imitation of the city schools. There never was any occasion for it and there is not now. Despite the primitive conditions and the inefficiency of teaching, we do know that the bone and muscle of American citizenship was created in these schools. To this condition, the rural schools owe their ancient strength. Let them return to it.

When once the young teacher acquires the "teaching heart" and has mastered the chief difficulties involved in the teaching of the various subjects, she is ready to undertake with some confidence of usual success the problems of class instruction. We have provided for both by giving one year of each type of teaching experience. By this arrangement, the students in the San Francisco Normal School obtain one year's teaching in our training school, operated upon the individual system, as preparation for rural schools. The second year of the normal school course they spend chiefly in the city schools where they are trained in the class system. Thus, in the two-year normal course, they receive training fitting them both for rural schools, under the individual plan, and for city schools, under the class system.

TRAINING IN SPEECH USAGES.

Correct Speech is Important. Some of our critics have professed themselves as greatly perturbed lest the individual system, by eliding the class recitation, also elides oral expression from schooling. We wish particularly to plead an alibi to this charge upon the simple ground that the usual class recitation never was an exercise in oral expression.

A quarter of a century ago when Latin was first seriously attacked, the cry went up from the Latinists, that Latin, whatever its sins, must be retained on account of "the value of translation to written and oral expression." It was an unfortunate cry, for it drew attention to the real effect of Latin translation upon English expression. It then at once became evident, when we came to think about it, that the usual literal translation is about the worst thing which can happen to expression. For producing habits of contortion and distortion of the English language, the usual translation exercise of the Latin class is the most perfect contraption ever invented by pedagogues. Since that time the Latin teachers have had nothing further to say upon this subject and have discreetly devoted themselves to the cultivation of the "free" translation.

For analagous reasons, it is perhaps a good thing now to bring into the limelight the effect, upon language expression, of the usual class recitation. Probably nothing equals its jerky, word-angling, tongue-tying, eye-rolling, body-wriggling, leg-twisting accompaniments. The usual spectacle of dear teacher trying to worm "language" out of little Billy by means of a recitation in grammar, or in stocks and bonds, is one over which sweet charity draws a shroud and closes this line of argument.

The essential prerequisites of any exercise in oral expression must be that the orators have (1) something to say, (2) an active desire to say it, (3) proper words with which to say it. The usual class recitation upon a text lesson has not one of these prerequisites. It is essentially a penal inquisition to discover whether or not little Billy obediently memorized his lesson. So far as the quality of oral expression is evidence of fact, the inference is generally pretty conclusive that little Billy did not. When we undertake to train pupils by habit to express themselves fluently and logically in English sentences we must aim at this goal specifically and systematically. We can not make it the tail of some other exercise, such as history or arithmetic, and expect it to wag by synchronous sympathy. When pupils are cloudy as to facts and ideas, are dealing with unfamiliar terms, and over anxious to sit down, they are in no condition to be linguistic. In searching for examples of success in oral expression, we can not do better than to copy the principles of the Jesuit schools. These schools make a success of oral expression—at least in the one feature of forensic argument. Their trained graduates can be picked out in a crowd. And this is the principle of it—forensic discussion is (1) a special definite subject of study and drill quite distinct from other subjects; (2) the subject matter and its terminology are first made thoroughly familiar and definite and even the lines of argument are tamped into habit; (3) the selection of words and balance of sentences are then made the goal of definite, concentrated effort.

If the individual plan cuts out the class recitation, then it performs a most needed excision to the benefit of training in oral expression. The next step is to frame a course, the single definite purpose of which is oral expression. This implies that (1) subject matter and words to be used are within the pupil's familiar range; and (2) that motives for corrections of form be stimulated by effective devices. During the past year we have undertaken the working out of such a systematic course. It has no special connection with individual instruction and we expect that when perfected, it shall be made the topic of a special monograph.

THE INDIVIDUAL METHOD IN RELATION TO OTHER EDUCATIONAL REFORMS.

We are not offering individual instruction as a panacea for all the diseases of which the schools are suffering. There are wastes and neglects, quite apart from those of *method*, to which the individual system is confined. We wish to make this distinction quite clear. There are many school reforms now on foot which have for their purpose the pruning of dead and useless materials from the present school courses, and others for the introduction of newer fields of schooling. With these movements, we are more or less in vigorous sympathy, but the project we are now presenting is not in this direction and is only indirectly connected with them. Nearly all of these newer projects have to do *with the subject matter*, but it is generally assumed that the same *means* of instruction, heretofore employed, will continue to be employed. Our present project has to do strictly with the *means* of schooling and is applicable to the teaching of all subjects. These newer projects, however right, will always be handicapped by the ancient error of putting new wine into old bottles. Unless we also reform the *means*, schooling will continue inefficient, and whether the goal and materials of education are old or new, useful or useless, the results must always be vitally handicapped.

Therefore, while our project is in no way in conflict with these other modern projects, nor in competition with them, we earnestly offer that it takes precedence, and is the *condition* of efficiency of any project.

The Supernormal. Singularly enough, the teaching which at present is giving us the most serious difficulty is not how to deal with the subnormalities but with supernormalities in pupils. We are all more or less familiar with supernormal types in music, in drawing, in color appreciation, in dramatic ability, in memorizing powers, in language, in fluency of poetic expression, and, rarely, in numerical computation. Unquestionably, there are also marked instances of supernormality which seemingly are the products of experience and training—those of mechanical invention, of scientific observation and application, of social and civic philosophy, of literary appreciation and expression. While these latter complex powers superficially seem the products of training, there is no reason to doubt that if the elemental factors were exposed, they also would prove to be congenital. There are a number of pupils, frequently normal or even slow in some qualities, but who in certain other fields, seem to get by a flash of intuition what their fellows must reach only by methodical plodding. They are not usually noticed in the class system since the class moves as a unit, and such pupils have no excitation of their abilities. But, by the individual system, such pupils are thrown clearly into relief. It has taken us some time to learn the practicality of passing these supernormals along upon their intuitions. "Pedagogic justice" seemed to require that in order to be fair to all alike, we must force them through the same laborious stages of the method required for the normal pupil. The systematic courses of our exercise books are not fitted for these pupils; for, while they may make creditable

progress, they are yet far from reaching their natural rates. They seem to do their thinking in realms of which pedagogy has yet made no surveys. We may get some illustration of it from the geniuses of computation in number who, with a glance at several columns, immediately write the correct answer. They have never been drilled upon combinations, reviewed and relearned! None of them has ever been able to make any explanation of how he arrives mentally at his results nor give the slightest inkling of his processes. The answers well suddenly forth from a submerged mind. Or, in art, the supernormal knows by inexplicable intuition the congruent and noncongruent factors which we spend years in the schoolroom, more or less fruitlessly, trying to drill into the heads of the normal and subnormal pupils alike. In science we again get glimpses of this other kind of thinking which make our studied laboratory step-by-step methods, invented by pedagogic system, seem grotesque caricature. Some pupils seem to have flashes of comprehension which make logical reasoning a tortoise in the race with a hare. In music, poetry, in the use of language and in other fields we continually catch these glimpses of the workings of a submerged mind which proceed, not *statically*, but *dynamically*, to their goals.

It is this kind of thinking by which invention and discovery proceed, heroes are molded, poems are thought, and miracles are wrought. Our schooling, by uniform lockstep, has never been aware of these conditions, has suppressed them by every known device of pedantry, and has sought by uniformity to extinguish what little Olympian fire human mentality occasionally manifests.

Practical questions arise which we are far from answering. For example, in arithmetic, should we attempt to teach a supernormal pupil how to "reason out" an example, or should we simply accept his result without explanation? We know that most pupils detest such "help," and only learn the explanation of how they think by memorizing what we think is the way they ought to think. We know, moreover, that as a rule they never think as we think we teach them to think, and they arrive at goals by altogether different mental routes. If we make this exception for supernormals, should we not make it also for normals and subnormals?

In all culture subjects, such as literature, history, geography, science, should we not tear out and burn root and branch, the written examination except for brief statement of fundamental facts of a formal character? Examinations are efforts to reduce thinking to dictated formula and as such deceive every one concerned as to what they really represent, and mean little of what they assume to signify.

We feel that the greatest gains in progress yet to be made will be by finding a means of permitting pupils of certain supernormal characteristics to reach their natural rates. In various subjects, such as music, art, literature, composition, discussion of science, we have, after formal foundation has been laid, segregated, regardless of grade, pupils showing sparks of genius. They are offered opportunities of a suggestive character and of varied assortment, put into situations which call for impromptu or original solution, stimulated to invention, etc. In the absence of definite knowledge

of how to develop these pupils, we have felt the pedagogue could at least remove restraints, clear the obstructions from the road of each individual, oil the wheels, kindle enthusiasm, and organize the applause. These types of study, we hope to make later the subject of a special monograph.

The Problem Beyond. The individual system, by releasing the pupil's ambition, and freeing inborn abilities from imposed restraints, offers a new impetus to education. Under it the child, the teacher and the school become different—they become natural. New conditions, new problems and new possibilities present themselves. The individual system, while it has not done more than to make natural education possible, nevertheless, in doing this, is doing all that is possible. While, probably, many of us can not follow Dr. Montessori into the mystic labyrinths of miraculous psychology, nevertheless all of us are brought to our feet in approval of the substitution of the child's initiative for dictated thinking. We recognize at once the dynamic power of the child in a state of mental absorption, as compared with the static thinking of a group of children performing a dictated task, for a dictated period, and by a dictated process of thought. We here stand at a crossroads and down one lane we see the galley slaves who represented so much muscle power—and nothing more; we see the human automatons in the submarine who, at the dictation of the man at the periscope, perform their duty, unthinking and irresponsible; we see dumb, shackled, unhuman labor, of all ages, reducible to mathematical terms of gravity—and nothing more; and we also see, in the same light, in the same dumb attitudes, the children of our schools, performing in the same way, upon the same principle, their dictated tasks in *the name* of education—is this education? But, down the other lane the human race has trod, we see, absorbed in thought, Prometheus, the prophets, the discoverers, the inventors, the doers of deeds, and in their faces and in their work are evidences of a distinctly different kind of thinking; it is dynamic, self-initiated, self-absorbed, drawing directly from the well-springs of that universal mind by which all things are created. It is now and here that, whatever our regret that the Montessori movement should be encumbered by unfortunate accompaniments, we must honor the spirit of the woman who, rising from the seven hills of ancient Rome, is calling the attention of the twentieth century to that simple touchstone of education which, new to the schools, is yet as old as human progress upon those hills. The new problem of education pounding at our doors is how to put the pupil into a state of self-initiated processes of thinking and how to avoid that thinkingless form of mentality which schools have ever been content to accept, and even to force. Once we realize this point of view, the future of schooling streams out in unlimited opportunities. The hard problem of this generation of school teachers is to cut loose from our traditional point of pedagogical view which makes schooling a treadmill of dictated thinking.

The Handwriting on the Wall. The class system of schooling was modeled, several centuries ago, upon the military conception. The most efficient examples of class instruction, today, are to be found in military

schools—notably in Germany. Under this military conception, pupils' minds are expected to move through the grades in perfect platoons, just as their physical bodies are moved in military procession. A century or less ago people believed that all minds were created alike and that the differences were due to subsequent education.

But now, from a number of sources, of science and experience, the light is breaking in that minds are born different, that they are made up of parts as varied in origin as their ancestry, and that each individual represents a combination of hereditary qualities probably never before assembled in one individual, and perhaps never to be repeated. Under the more modern conception education is not a creation of new parts, but a development of what ancestry has given, and must therefore be a separate and distinct process for each individual.

The sciences akin to education have been rapidly abandoning in practice the theory of uniformity in mentality. Pathology has already left far behind the notion that "insanity" represents a single type of disease, to be cured by confinement or by a single remedy. There are now many "insanities" and treatment is assuming a purely individual basis.

Less than half a century ago, the students of criminology were in hot pursuit of "types." We heard of the "atavistic type," the "recidivistic type," etc., but now we are dealing with each delinquent as an individual. The new standard authority, as a text, is entitled "The Individual Delinquent."

Similarly it is only a generation ago that all persons mentally deficient were commonly called "idiots" and later this uniformity was broken into types—"the idiot," "the imbecile," the "feeble-minded" or "the moron," and again these were broken into subtypes, the "Mongolian type," the "Malay type," etc. But modern practice, in treatment, is learning that these types are mere word classifications without fixed definition, and practitioners are treating each case as individual and peculiar to himself. As in all movements of modern progress, the schools are laggards and we must expect that they will be the last and the most resistant to individualism. But the certainty that this step must be taken eventually is plain. *The handwriting is upon the wall.* Aside from the general movement toward individual treatment in all sciences dealing with mentality, the actual bankruptcy of education by group instruction is laid bare by its own results. There must be education of the educators. There will be resistance and protests. An intelligent civilization will not long suffer its schools to be operated by false and abandoned dogmas and at the fearful cost in failures at the outset of life which the figures of the system itself frankly reveal. The tide is now at the turn.

Need of a New Point of View. A new point of view is needed for schooling. By this I do not mean we are suffering for an additional doctrinaire, for we already have a rare collection. But all our doctrinaries rest upon the one alluring, but unsubstantial, hope that if we can discover the process by which all people think, we can hitch a system of education to it.

All pupils could then be educated with definite and exceptionless certainty, and young minds sent upon the road to omniscience with the exactitude of train dispatching. From Plato down, philosophers have been "discovering" these universal laws. The trouble has been that the laws will not stay discovered. Each new discoverer feels it first duty to demolish all previous discoveries and set up his own in their place. As a consequence, there are now about as many sets of "laws" as there have been discoverers—and none of them has ever been known to have a practical application. At best they have been merely ornamental illustrations of those sad words—the "saddest of tongue or pen—what might have been."

Our existing school theory is the product—a hopeless snarl of conflicting, interlacing, jangling phrases, which the web-combing philosophers of all ages have contributed to this word museum. The commercial text manufacturers have put this entangled mess into paragraphic form, and for twenty years normal schools and university pedagogical departments have been peddling it out as *training for teachers!* In order to have groups of words which have no meaning, it is convenient to have a vocabulary which has no sense. This need has been met admirably by what its various purveyors call the "scientific terminology" of pedagogy, but which has been more accurately named, by one thoughtful observer,* as "pedaguese." This pedaguese has fulfilled the purpose of its manufacturers. Professors of pedagogy whose mentality is sufficiently anæmic to be honest in teaching the stuff are exhilarated by a buoyant sense of their own erudition. Students are awed by its impressive unintelligibility into a state of respectful doubt as to their own mental capacity. Lay observers have vibrated between the theories that pedagogues are a band of fakirs and that they are a flock of harmless lunatics with a penchant for large words. After all, the difficulty in finding the universal process of thinking may be due to the alternative that there is none. Therefore, we need a new point of view which brings this alternative above the horizon. At any rate, let us abandon the pretension to a "science" of education until we can taste a scientific flavor. Let us be honest with truth even if we must appear poor in wisdom. In the mean time, individual teaching in practice is very suggestive that each man's process of thinking is his own, that he borrows only from his ancestry and lends only to his posterity.

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*Welland Hendricks—"A Joysome History of Education." Mr. Hendricks offers among his samples of pedaguese, the following quotation from a standard text of wide use by normal schools and universities: "Upon what basis shall the agency of formal education select the experiences that are to function in modifying adjustments?" Mr. Hendricks comments as follows:

"This typical sentence illustrates a remarkable feature of the language, namely its peculiar interchangeability of words. For instance, as we are assured by one of the most learned pedaguese scholars in the United States, including Guam, the expression 'experiences that are to function in modifying adjustments' means the same as the adjustments that are to modify in functioning experiences, or the functions that are to adjust in experiencing modifications, or the modifications that are to experience in adjusting functions. If you don't see the meaning of it in any form read this:

'The fact that the organization of experience in coherent systems is a fundamental factor in promoting the application of experience to the practical improvement of adjustment is profoundly significant to the process of education.'"

The Real Difficulties in Introducing the Individual System. The real impediments to be overcome in eliding the lockstep in our schooling are quite other than actual impracticability in making a change:

I. The inertia of the administrative departments of the school system. This is natural. We schoolmasters have grown up in our system. We are part and parcel of it, as it is of us. "The virtue in most request," said Emerson, "is conformity. Self-reliance is its aversion. It loves not realities and creators, but names and customs."

Our first and most forcible reaction to any proposal for change is defense and argumentative objection to change. We are willing to work our fingers to the bone to make productive the primitive machinery we have, but our natural tendency is to attack any proposal to substitute new machinery. We are not willing to give the new proposals a hearing, much less a trial. This is all natural, human, and, in the majority of cases, the safe thing. It is a condition with which all reform must justly wrestle and by which finally be tested.

II. The teaching body, with a minority of exceptions, is naturally, and more or less justly, fearful that change will mean personal inconvenience. Teachers have experienced the ravages of many new nostrums, most of which have come to naught. There is usually justice and sanity in their suspicion.

III. The public mind is ever ready to condemn an existing system, but is as extremely suspicious of any proposal of remedy. The public mind is enthusiastically destructive, but always pessimistic as to reconstruction.

The above are natural, and more or less legitimate difficulties in the way of school reforms. But there are a number of illegitimate impediments. There are vested personal interests—(1) officials who are not interested in schools, except for personal advantage, and it matters nothing to them whether or not schooling is efficient, provided they are not disturbed; (2) incompetents who do not grasp the facts of existing evils, and feel that such agitation "hurts business"; (3) commercial book publishers whose business would require expensive changes, etc.

A Word of Personal Privilege. The faculty of the Normal School very earnestly believes in the significance of the results of this effort to eliminate the evils of the lockstep from our school system. We believe that the problem of adaptation of the plan of individual instruction to all forms of schooling contains no very serious obstacles. In putting forth what has been done, we are more concerned to arouse the force that will elide the manifest and fearful evils of the lockstep, in any way, than that our particular constructive remedy should be adopted in its stead.

We are aware that the natural conservatism of many of our fellow workers in educational fields and their sentiments of commendable loyalty to the school system make it difficult to present the case without offending their sensibilities. We especially regret that in order to overcome the inertia of general acceptance of school evils, to which the world has been long accustomed, we have felt obliged to state these lockstep evils without apology

or palliation, and to lay bare the truth, as we see it, in its unexcused enormity. We regret exceedingly that many of our fellow workers, with these sentiments and this loyalty, have failed to recognize that we are attacking an impersonal system, not persons. Further, we would insist, in the interest of the real issue raised, that argument against, or even disproof of the practicability of the individual plan which we offer as a constructive remedy, in no way nor degree mitigates the appalling character of the evils of the lockstep. To prove that individual instruction is impossible in no way excuses lockstep schooling. And this much is significant: the pamphlet, "Lockstep Schooling and a Remedy" has now been issued nearly two years. It has been widely read and discussed. We have heard much approval, or admission of the truth of the charges against lockstep schooling. We have heard some argumentative doubt and denial, some ridicule of the practicability of the individual system in its application to large classes upon the grounds (assuming no change is to be made in administration) that it would cost more or the teacher's work would be harder; we have noted considerable irritation and vexation against ourselves for arousing hostile criticism of the school system, and some personal and malignant resentment in consequence. But—and this is what is significant—*throughout this discussion, no word has reached us showing even an attempt to dispute the facts, truth or conclusions, in general or in any single detail, of the indictment of the lockstep evils of the school system!*

There is then no real issue. The large majority who approve and support the truth of this indictment, and the minority who have been personally vexed only by immaterial side issues, seem quite agreed upon the one essential. There is therefore no reason, so far as all honest and genuine persons are concerned, why there should not be one combined movement to uproot from the schools the lockstep system which has sapped the strength, and vitiated the efficiency of our schools, which has driven half the pupils out of the schools without an adequate education, and which now is responsible, very largely at least, for the army of life "misfits," and for the failure of social, civic and industrial civilization to accomplish legitimate and reachable goals.

SAN FRANCISCO STATE NORMAL SCHOOL PUBLICATIONS.

The Teachers' Manuals.

Some years ago the San Francisco State Normal School undertook the publication of courses of study for teaching the various subjects of the curriculum of the elementary school. These courses were prepared by members of the faculty and were the outgrowths of daily experience in directing and supervising the teaching by student teachers in the Normal Elementary School. The original purpose of these publications was to furnish to these student teachers directions for teaching each of the subjects. An essential necessity in their construction was that they should be very explicit, specific and practicable in use. Gradually there grew a demand for them by teachers in the public schools, and the Normal School began to print larger editions in order to fill this new need. The demand from the public school sources has now grown to such proportions that one chief service of the institution is that of its publications.

Pupils' Exercise Books.

Up to 1912 the publications had been confined to courses of study for the assistance of teachers. During 1912 the publication of pupils' exercise books, accompanying the teachers' bulletins, was commenced. In one type of these exercise books the pupils write directly in printed lessons. This device saves a large amount of labor and time of the teacher in copying upon the board and in oral instructions. Further, it saves the pupils' time in copying from the board. But pupils can make progress two or three times faster than by the usual method, and the work is done much more effectively and without the sense of drudgery either to pupil or teacher. The exercise books are printed upon paper that will take ink. They cost little or no more than the common blank books of the same quality of paper.

Monographs.

There is now commenced a series of monographs of a practical nature, aimed to assist or suggest further development of a greater efficiency of school instruction.

Three Series.

There have been three series of publications in time—one issued prior to the great fire of 1906, of which no numbers now remain; a series begun in 1907 and continued to 1914, and, finally, the Pupil's Self-Instruction Series, begun in 1914. The latter two will be found listed below.

System of Publication.

The expense of these publications is borne chiefly by a revolving fund obtained by their sale. They are printed in the State Printing Office and sold practically at manufacturing cost. They are issued merely upon the authority of the individual authors and the editor of the series, and do not represent a general or necessarily permanent policy of the school, nor a consensus of its faculty or trustees.

How to Order.

All orders must be accompanied by school district warrant check, money order or stamps. We cannot fill orders which require keeping of accounts. As most of the purchases of bulletins and pupils' exercise books are now made by the school districts, teachers who send orders should be careful to secure the signature of trustees to warrants in payment for orders, so that delays may be avoided. Be careful, also, in filling out orders that the bulletins are listed and are not out of print. We cannot exchange publications once purchased unless error has been made and the request is made within three days. Kindly avoid, so far as possible, conditions which require special correspondence in the business department.

MONOGRAPHS.

Monograph A. A remedy for Lock-Step Schooling; a preliminary report upon the weakness and impossibilities of the class system of instruction, and progress to date in substituting therefor an individual system of teaching. By Frederic Burk. Price, postpaid, 15 cents.

Monograph B. Outline courses in general information and general intelligence. This monograph undertakes to map out the beginning of a reorganization of the high school course of study, not only for the better preparation of those intending to become teachers, but also in the general cause of wider preparation of all students in industrial, civic and social intelligence. To students intending to enter the San Francisco State Normal School the monograph will be sent free. The subjects are printed as separate pamphlets: American History and Civics; pamphlet for General History, Science, and Literature, Arithmetic, Geography, and Music; Spelling, Language, and Grammar. Price—the set will be sent for 25 cents, postpaid; separately, 5 cents each.

Monograph C. Everychild versus Lockstep Schooling; Data of Two Years' Experience in the operation of a system of Individual Instruction showing accelerated rates of pupils, elimination of wastes, actual saving in cost of schooling, etc. Compiled by Frederic Burk. Price, postpaid, 15 cents.

Monograph D. Critical Difficulties in the Teaching of Arithmetic. For teachers, and for students of Normal School. By Mary A. Ward. Price, 15 cents, 3 cents added for postage.

PUPIL'S SELF-INSTRUCTION SERIES.

(Adapted to an Individual Method of Teaching.)

The occasion and general plan for this series is set forth in Monograph A. To conform to this plan we are undertaking the publication of a series of pupils' exercise books and teachers' manuals adapted to use under the individual system of instruction. They, of course, may also be used under the class system and will assist in teaching by the state series texts. Their plan of construction embodies the features outlined in Monograph A—the "elastic" lesson, by which the number of exercises to secure comprehension or accuracy varies according to individual need; the adaptation to simplicity of language; the lesson directions whereby the pupil can make his own rate of progress and, to a large extent, independently of prescribed lessons or help from the teacher; the cumulative reviews by which all principles once learned are carried forward automatically.

This series will be found invaluable, especially for the rural school where pupils must depend largely upon their own resources. The teachers' manuals will give full directions for operation of the system.

Prices.

Except where specially stated, the price of the numbers of the Self-Instruction Series will be as follows:

At the Normal School, 10 cents each;

By mail, 12 cents each, postpaid;

By express or freight, 10 cents each, transportation charges paid by buyer.

Arithmetic. By Frederic Burk and Mary A. Ward.

No. 20—Teachers' Manual to accompany pupils' books, Nos. 21, 22, and 23, giving directions, answers to examples and supplementary examples. Price—25 cents each, postpaid.

No. 21—Pupils' Exercise Tablet in addition and subtraction.

No. 22—Pupils' Exercise Tablet in multiplication and short division.

No. 23—Pupils' Exercise Tablet in compound multiplication and long division.

No. 29—Problems in Percentage. Double number. Price—20 cents each at Normal School; 24 cents by mail; $20.00 per hundred by express.

No. 30—Applications of Percentage.

No. 31—Problems in Mensuration, Part I.

No. 32—Problems in Mensuration, Part II.

Language. By A. S. Boulware and Ethel G. Smith.

No. 42—Pupils' Exercise Tablet in Language, Part I (for fifth grades).

No. 43—Pupils' Exercise Tablet in Language, Part II.

No. 44—Pupils' Exercise Tablet in Language, Part III.

Grammar. By Ethel G. Smith and Frederic Burk.

No. 51—Part I. Analysis, nouns, pronouns, adjectives, adverbs.

No. 52—Part II. Prepositions, number, and review.

No. 53—Part III. Verbs, principal parts, predicate forms.

No. 54—Part IV. The verb, be; attribute complements, helpers.

No. 55—Part V. Participles.

No. 56—Part IV. Infinitives imperative, possessive comparison, connectives, compound parts, clauses, review.

No. 57—Part VII. (By A. S. Boulware). Corrective exercises for current errors.

No. 58—Part VIII. (By A. S. Boulware.) A series of pads, supplementary to No. 57, with exercises to correct specific errors of grammar, as follows: 1. Recognition of Predicates; 2. Time of Predicates; 3. Nouns and Pronouns; 4. Recognition of Phrases; 5. Infinitives and Participles; 6. Relative Pronouns; 7. Comparison; 8. Clauses; 9. Connectives; 10. Parts of Speech. Price—10 cents each, postage 5 cents.

History. By P. F. Valentine.

No. 80—Pupils' Exercise Book, Part I, to accompany advanced state text. (Columbus through Jefferson.)

No. 81—Pupils' Exercise Book, Part II, to accompany advanced state text. (Madison through Civil War.)

No. 82—Pupils' Exercise Book, Part III, to accompany advanced state text. (Civil War to present.)

No. 83—Difficulties of history texts simply explained. (Democracy, the Constitution, Centralized Government, Religious Toleration, Monroe Doctrine, Spoils System, Civil Service Reform, the Tariff, etc.)

Geography. By F. W. Hoffman.

Bulletin No. 18, Teachers' Manual, with two pupils' exercise books in Map Geography, is partly constructed upon the individual plan. It is already published and may be obtained upon application. (See next list.)

IN PREPARATION.

There are in preparation, for publication during the year, the following:

Phonics. A series of exercise books.

Writing. A series of exercise books.

Drawing. A series of exercise books.

Music. A series of exercise books in formal note work.

TEACHERS' MANUALS AND PUPILS' EXERCISE BOOKS.

(Series Published 1907 to 1914.)

(Out of print; Nos. 1, 2, 3, 5, 6, 7, 8, 9, 13 and 14. The materials of these have largely been absorbed in revised editions represented by the later numbers of the Self Instruction Series.)

No. 4—A Course of Study in Map Geography; paper bound, 52 pages. By Allison Ware. Price—by mail, postpaid, 30 cents.

Outline Maps—In connection with Bulletin No. 4, the school publishes a series of nine outline maps from which pupils may trace outlines for use in location. These maps are 9 by 12 inches in size. They represent the following areas: North America, South America, Europe, Asia, Africa, Australia, United States, California, and the hemispheres. Price—by mail, postpaid, for set of nine, 15 cents. (See also Bulletin No. 18.)

No. 9—A Course of Study in Language; 174 pages. (Out of print; order Nos. 42, 43, 44.) By Effie Belle McFadden.

No. 10—A Course of Study and Teachers' Handbook in the Common Literature of Life; 207 pages, paper bound. By Allison Ware. Price—postpaid, 40 cents.

No. 11—A Course of Study in Formal Arithmetic and Teachers' Handbook. By David Rhys Jones. This bulletin is published in various parts as follows:

Part I. Teachers' Handbook and exercises for integers; 109 pages, paper bound. Price—by mail, postpaid, 30 cents.

Part II. Teachers' Handbook and exercises for common fractions, decimals, percentage, denominate numbers and mensuration; 84 pages, paper bound. Price—by mail, postpaid, 30 cents.

The Pupils' Exercise Books, Nos. 1, 2, and 4, accompanying the Handbooks, are out of print; a limited stock of No. 3 (fractions and decimals) is still on hand. Price—10 cents by mail; the pupils' work, however, is included in the Teachers' Handbook. Individual Series No. 21 takes the place of No. 1; No. 22 and No. 23 take the place of No. 2.

No. 12—Review Courses of American History by means of Composition Topics, and Teachers' Handbook to the use of the California State Series Texts. By P. F. Valentine.

Part I. Teachers' edition containing introduction and directions for use of the composition method, the pupils' topics of the primary text, the pupils' topics of the advanced text, a paragraph directory to the text, and a cumulative fact review of the advanced text; 73 pages. Price—postpaid, 25 cents.

Part II. Pupils' edition containing the composition outlines which follow the state primary text in history; 10 pages. Price—postpaid, 5 cents; in lots of 25 or more, freight or expressage paid by purchaser, 4 cents per copy.

Part III. Pupils' edition containing the composition outlines which follow the state series advanced text in history, the paragraph directory to the text, and the cumulative fact review for the same; 48 pages. Price—postpaid, 10 cents; in lots of 25 or more, freight or expressage paid by purchaser, 8 cents per copy.

Out of print—order No. 29, Self-Instruction Series.

No. 14—A Course of Study in the Teaching of Composition, Language and Spelling; paper bound. By Effie B. McFadden, assisted by Ethel G. Smith. Teachers' edition for first three years. Price—postpaid, 25 cents. Nos. 1 and 2 of the pupils' exercise books heretofore accompanying this handbook are out of print; they are replaced by Nos. 40 and 41, Self-Instruction Series. A small stock of Nos. 3 and 4 still remains. Price—10 cents, postpaid.

No. 16—A Course of Study in Phonics. By Corrine H. Johnstone and Frederic Burk. Teachers' Edition, Part I, 90 pages. Price—postpaid, 20 cents.

Pupils' Phonic Exercise Book No. 1 (containing exercises reprinted from teachers' edition). Price—postpaid, 10 cents; in lots of 25 or more, freight or expressage paid by purchaser, 7½ cents.

No. 17—A Composition Course in American Government and Pupils' Handbook to the State Series Text (Dunn's Community and Citizen) with Supplement containing revised or additional paragraphs upon conservation, some California laws, Interstate Commerce Commission, California's compulsory education, direct election of United States senators, direct primary, township and county, the commission form of city government, the initiative, referendum and recall, the cabinet; paper bound, about 40 pages. By P. F. Valentine. Price—postpaid, 15 cents; in lots of 25 or more, expressage or freight paid by purchaser, 10 cents per copy.

No. 18—A Course of Study in Map Geography; can be used in grades as low as fourth. By F. W. Hoffman.

Teachers' Manual containing directions for use of exercise books. Price—10 cents, postpaid.

Pupils' Exercise Book No. 1—With maps and blanks in which pupils write directly. Price—12 cents, postpaid.

Pupils' Exercise Book No. 2—Constructed upon plan of individual instruction, with maps and blanks in which pupils write directly. Price—10 cents, postpaid; in lots of 25 or more, freight or expressage paid by purchaser, 7½ cents per copy, for both exercise books

Outline Wall Maps, 24 by 32 inches, unmounted (directions given for mounting); No. 1, world hemispheres; No. 2, Mercator's projection of world. Price—10 cents each, postpaid.

Pupils' Atlas (9 maps of the continents, United States, Mercator and California). Price—10 cents, postpaid.